Abstracts of the Organised Sessions

These abstracts will be published in a supplement of the Journal on Tropical Medicine and International Health (TMIH) and will become available online shortly.
**1OS1.1**

**Zika virus and vector competence**
Anna-Bella Failloux
Institut Pasteur — ZIKAlliance

**Introduction:** Zika virus (ZIKV) was first described outside its historic geographic range within Africa and Asia during a string of outbreaks in several South Pacific islands in 2007-2014. Since May 2015, ZIKV has been reported in Brazil, other Latin American countries and the Caribbean highlighting its potential to spread globally including temperate regions. *Aedes aegypti* is considered the main vector and *Aedes albopictus*, a potential vector. It has also been hypothesized that other anthropophilic vectors such as *Culex* mosquitoes may be involved in ZIKV transmission.

**Aim:** We have evaluated the vector competence of *Ae. aegypti*, *Ae. albopictus* and *Cx. quiquefasciatus* populations from the Caribbean, Americas, Europe with the epidemic Asian genotype of ZIKV.

**Methods:** Mosquitoes were orally exposed to an Asian genotype of ZIKV. Upon exposure, engorged mosquitoes were maintained at 28°C±1°C, a 16h:8h light:dark cycle and 80% humidity. Batches of mosquitoes were processed at different days post-infection (dpi). Mosquito bodies (thorax and abdomen), heads and saliva were analyzed to measure infection, dissemination and transmission, respectively.

**Results:** We showed high infection rates but low dissemination and transmission rates for both *Ae. aegypti* and *Ae. albopictus*. Transmission of ZIKV was observed in the two mosquito species at 14 dpi but at a low level. We also demonstrated that *Culex* mosquitoes are experimentally unable to transmit ZIKV.

**Conclusions:** Although susceptible to infection, *Ae. aegypti* and *Ae. albopictus* populations from the Caribbean and Americas were unexpectedly low competent vectors for ZIKV. This may suggest that other factors such as the large naïve human population for ZIKV living at proximity of high densities of human-biting mosquitoes has contributed to the rapid spread of ZIKV during the American outbreak. In Europe, *Ae. albopictus* populations were weakly competent to ZIKV underlining (but not excluding) the low risk for ZIKV to expand into most parts of Europe owing to the restricted distribution of European *Ae. albopictus*. Moreover, there was no experimental evidence that *Culex* mosquitoes can participate to ZIKV transmission. Consequently, mosquito control to reduce ZIKV transmission should continue to be focused on *Ae. aegypti* and *Ae. albopictus* populations.

**1OS1.2**

**Zika virus replication in testicles in mice and impact of viral replication inhibitors**
Johan Neyts
KU Leuven, ZIKAlliance/ZikaPLAN

We established previously a robust animal model of ZIKV infection in AG129 (IFN-α/β and IFN-γ receptor knock-out) mice. These mice proved highly susceptible to ZIKV infections: inoculation with as low as 2 PFU already resulted in virus-induced disease; infection with higher inoculums resulted in a faster progression of the disease. ZIKV infection in these mice results in a neutrophilic encephalitis with viral antigens accumulating in neurons of the brain and spinal cord. The virus is also detected in organs such as the spleen, liver and kidney. Interestingly, high levels of viral RNA (6.4log_{10}) are found in the testicles of infected male mice. This finding was recently corroborated by others that showed that infectious virus was present in the testis and epididymis of infected mice as early as day at 3 pi and persisting for as long as 11 weeks pi. Long-lasting persistence of ZIKV in semen in humans has been reported. We are currently assessing whether inhibitors of ZIKV replication such as the nucleoside analogue 7DMA (7-deaza-2'-C-methyladenosine), a compound for which we demonstrated efficacy against ZIKV infection in mice, is able to lower ZIKV titers in testicles; including when treatment is initiated late after infection. 7DMA serves as a reference compound to demonstrate reduction of viral load in testicles semen. We propose that novel ZIKV inhibitors that are being developed (an effort to which we contribute) should preferably elicit activity in this model.
**1OS1.3**

**Neuropathogenesis in peripheral versus central nervous system**

Hugh Willison  
_Glasgow University, ZikaPLAN_

The recent global outbreak of Zika virus (ZIKV) infection has been linked to severe neurological disorders affecting the peripheral and central nervous systems (PNS and CNS, respectively). The pathobiology underlying these diverse clinical phenotypes are the subject of intense research; however, even the principal neural cell types vulnerable to productive ZIKV infection remain poorly characterised. Here we used multi-cell type CNS and PNS myelinating cultures from wild type and Ifnar1 knockout mice to examine neuronal and glial tropism and short-term consequences of direct infection of a Brazilian variant of ZIKV. Cell cultures were infected pre- or post-myelination for various intervals, then stained with cell-type and ZIKV-specific antibodies. In bypassing the systemic immune system through ex vivo culture and, the type I interferon response using Ifnar1 deficient cells, we were able to evaluate the intrinsic infectivity of neural cells. Through systematic quantification of ZIKV target cells in myelinating cultures, we find that ZIKV is type I interferon sensitive and that mouse CNS cells are considerably more susceptible to infection than PNS cells. In particular, we show that CNS axons and myelinating oligodendrocytes are particularly vulnerable to injury. These results are likely to have implications for understanding the currently poorly defined neurological phenotypes associated with ZIKV infection. Furthermore, we have developed a quantifiable ex vivo infection model that can be used for fundamental and therapeutic studies on viral neuroinvasion and its consequences.

**1OS1.4**

**Zika virus replication at the placental interface: The role of non-neutralizing immunity**

Bonfante F.\(^1\), Mazzetto E.\(^1\), Gervasi M.T.\(^2\), Veronese P.\(^2\), Tran M. R.\(^2\), Giaquinto C.\(^2\), De Benedictis P.\(^1\), Capua J.\(^3\) and Terregino C.\(^1\).  
\(^1\)Dept. of Comparative Biomedical Sciences, Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro, Italy;  
\(^2\)Dept. of Women’s and Children’s Health, Hospital/University of Padova, Padova, Italy;  
\(^3\)Dept. of Animal Science, Emerging Pathogens Institute, University of Florida, Gainesville, Florida, USA

**Introduction:** The confirmation of causality between Zika virus (ZIKV) infection in pregnant women and the congenital Zika syndrome has urged the scientific community to unravel the etiopathology of this disease. The strong neurotropism of the virus indicated by instrumental and pathological findings has been demonstrated through a number of _in vitro_, _ex vivo_ and _in vivo_ models. Nevertheless, the mechanism, timing and immunological aspects of placental crossing are still poorly understood, representing a crucial knowledge gap for the development of therapeutic and prophylactic interventions. ZIKV, like other members of the _Flaviviridae_ family, is a pathogen that can enhance its replication in the presence of non-neutralizing immunity through a mechanism known as antibody-dependent enhancement (ADE). _In vivo_ and _in vitro_ studies have proven the occurrence of ADE in the presence of anti-Dengue cross-reactive non-neutralizing antibodies, posing an obvious scientific question: given the co-circulation of these viruses in many of the countries affected by ZIKV, how can ADE influence the vertical transmission of the disease?  

**Aim:** In our study, we decided to establish an _ex vivo_ model for the characterization of ADE at the level of the placenta.  

**Methods:** Placental explants obtained from healthy donors through either elective termination of pregnancy or after delivery, will be cultured in the presence/absence of anti-ZIKV/Dengue monoclonal antibodies (MAbs) and dosed with ZIKV. The use of MAbs in their native and Fc-mutant variants at sub-neutralizing concentrations will allow a fine characterization of the cellular tropism and replication dynamics of ZIKV, under different immunological conditions. To test the hypothesis of a transcytotic crossing of the placenta by the mediation of the neonatal Fc receptor (FcRn), FcRn-mutant variants will also be tested. Moreover, to evaluate the therapeutic potential of ZIKV-specific neutralizing Mabs, we will perform studies on explants mixing MAbs and ZIKV-immune plasma from convalescent patients.  

**Conclusions:** The variability in the range of symptoms and findings associated with the Zika congenital syndrome might depend not only on the gestational age, but also on the immunological profile of patients. Our studies will investigate whether cross-immunity is a crucial determinant for the replication of ZIKV at placental level.
Human behaviors are increasingly recognized to play a key role in the spread of infectious diseases. Although a set of social and cognitive determinants has been consistently found to affect the adoption of health protective behaviors aiming to control and prevent a variety of infections, little is currently known about the ecological drivers of these behaviors in epidemic settings. We took advantage of the outbreaks of re-emerging mosquito-borne diseases, chikungunya and zika that occurred in French Guiana in 2014/15 then in 2016 to test empirically the assumption proposed by Zielinski-Gutierrez & Hayden that the proximity of the disease and perceptions of the natural environment may considerably shape public response to an emerging health threat. To achieve this, cross-sectional surveys were conducted among the adult population of the region (N > 1,000) during these epidemics. Surprisingly, spatial analysis of the collected data leads to counterintuitive results as the participants who lived in the most affected area expressed less concern about the disease and practiced preventive behaviors less frequently than did other participants. These paradoxical results may be attributed to the possible risk compensation effects which have previously been observed in the literature about health protective behaviors, and described by several social and psychological theories.
1OS2.1
Using genomics to investigate host/Salmonella interactions
Gordon Dougan
The Wellcome Trust Sanger Institute, Department of Medicine, Cambridge University, Cambridge, UK

The availability of detailed genome sequence is providing a blueprint for new approaches to the design of experiments to interrogate Host/Pathogen interactions. On the ‘pathogen’ side well annotated reference genomes can guide transcriptome and proteome analysis and facilitate high throughput mutagenesis and phenotyping experiments. Acquiring genome information from microbial populations facilitates transmission tracking, evolution studies and can help identify emerging trends such as the evolution of antibiotic resistance. Such approaches can also help define the microbial communities living in and on the host. The availability of draft genomes for vertebrate hosts including humans, veterinary species, mouse and zebrafish are helping, again in terms of transcriptome, proteome and RNAi-type inhibition studies. They are also facilitating high throughput mutagenesis and phenotyping programmes that can provide valuable data to the community as open access. As we sequence human populations we can use this data to identify loci under selection in different human populations and even investigate rare mutations with extreme phenotypes. Here, specific examples built around clinical studies and infection models will be used to illustrate the power of some of these approaches.

1OS2.2
An introduction to invasive Salmonella infections and their burden in sub-Saharan Africa
Lisette Mbuyi Kalonji1,2, Barbara Barbé3, Marie-France Phoba1,2, Octavie Lunguya1,2, Jan Jacobs3,4.
1Department of Clinical Microbiology, National Institute for Biomedical Research, Kinshasa, Democratic Republic of the Congo; 2Service of Microbiology, University Hospital of Kinshasa, Democratic Republic of the Congo; 3Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium; 4Microbiology and Immunology, KU Leuven, Belgium

Introduction: Salmonella infections are major killing and disabling diseases in sub-Saharan Africa and their public health impact and genetic characteristics are currently been unraveled.

Aim: To present a summary of the different Salmonella serotypes and their burden of disease, with focus on sub-Saharan Africa and the Democratic Republic of the Congo (DRC).

Method: Literature review and data from the microbiological surveillance network of the National Institute of Biomedical Research, Kinshasa, DRC (2007 – 2015).

Results: With regard to human disease, Salmonellae are divided into typhoidal serotypes represented by Salmonella enterica serovar Typhi, Paratyphi A, B and C, and thousands of non-typhoidal Salmonella serotypes. Typhoidal Salmonella strains are human host restricted and cause typhoid (enteric) fever and paratyphoid fever, characterized by high fever and complications such as sepsis and shock, gastrointestinal bleeding or perforation and encephalopathy. The estimated global burden is over 27 million cases per year with over 200,000 deaths. The emergence of multidrug-resistant (MDR) typhoid is a major global health threat. Whole-genome sequence analysis identified a single dominant MDR lineage, H58, that has spread throughout Asia and Africa over the last 30 years. Non-typhoidal Salmonella (NTS) strains may either infect a broad range of vertebrate animals) or be adapted to particular animal species. In contrast to northern countries where NTS cause self-limiting gastroenteritis, NTS in sub-Saharan Africa cause bacteraemia, associated with malaria, severe malnutrition, severe anemia and HIV infection, and with high case fatality rates among children <5 years. Whole-genome sequencing of most frequent NTS serotypes (Typhimurium and Enteritidis) showed that the African strains have undergone microevolution to become human adapted. The global burden of invasive NTS disease was estimated to 3.4 million of cases and 681,316 deaths in 2010 - exceeding the mortality caused by malaria. In the Democratic Republic of the Congo, the bacteraemia surveillance network reported Salmonella Typhi and NTS as first ranking pathogens. MDR and decreased ciprofloxacin susceptibility among Salmonella Typhi were around 30% since 2007, and combined Extended Spectrum Beta-lactamase production and azithromycin resistance were noted in 12.7% of Salmonella Typhimurium isolates since 2013.

Conclusion: Invasive salmonellosis presents a considerable burden of disease in sub-Saharan Africa.
A newborn salmonella from Africa - Whole-genome sequencing reveals the population structure of invasive Salmonella Typhimurium in sub-Saharan Africa

Van Puyvelde S.1, Heinz E.2, Barbé B.3, de Block T.1, Phoba M.-F.4, Kalonji Mbuyi L.4, Lunguya O.4, Jacobs J.3,5, Dougan G.2, Deborggraeve S.1

1Department of Biomedical Sciences, Institute of Tropical Medicine, Antwerp, Belgium; 2Microbial Pathogenesis, The Wellcome Trust Sanger Institute, Hinxton Cambridge, United Kingdom; 3Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium; 4National Institute for Biomedical Research, Kinshasa, Democratic Republic of the Congo; 5Department of Microbiology and Immunology, KU Leuven, Belgium

Introduction: Salmonella Typhimurium is among the leading causes of bloodstream infections in Sub-Saharan Africa (SSA). In 2012, the population structure of Salmonella Typhimurium in SSA was revealed by whole-genome sequencing of 124 strains originating from 7 African countries. Two clonal lineages could be described that sequentially spread over SSA (1). However the Salmonella Typhimurium population structure in SSA is still fragmentary, and contains large gaps, especially in Central Africa.

Aim: To yield a high-resolution overview of the Salmonella Typhimurium population structure in SSA.

Methods: A unique collection of 1411 Salmonella Typhimurium strains from SSA were aggregated from different biobanks and 481 were selected for Illumina whole-genome sequencing. These strains originated from surveillance and reference work (1979-present, Democratic Republic of the Congo (DRC), Burkina Faso, Rwanda), and from recent travellers upon return home. Phylogenetic analysis within the context of the 181 publicly available Salmonella Typhimurium genomes from SSA was performed to unveil the population structure of Salmonella Typhimurium in SSA.

Results: We obtained a high-resolution view on the Salmonella Typhimurium population structure in SSA, allowing identification of new lineages. A first analysis demonstrated the emergence of a new sublineage in the DRC that has undergone 4 large genomic changes compared to its ancestor lineage: (i) excision of the flagellin fliB gene, (ii) loss of an antimicrobial-resistance (AMR) cassette in the pSLT virulence plasmid, (iii) uptake of a new plasmid carrying AMR, and (iv) accumulation of 56 SNPs. We identified mutations that are linked to Salmonella virulence processes and potentially have an effect on invasiveness.

Conclusion: Our analysis fills the gap in the Salmonella Typhimurium population structure in Central Africa. This forms an important framework describing the evolution of Salmonella Typhimurium over the past decades, allowing the identification of emerging lineages with increased AMR and invasiveness.

Reference:
**WGSA.net: Genomic surveillance made simple**

Silvia Argimón, Corin Yeats, Khalil Abudahab, Vanessa Wong, Satheesh Nair, Se Eun Park, Florian Marks, Kathryn Holt, Stephen Baker, Gordon Dougan, David M. Aanensen

The treatment of typhoid is being compromised by the emergence of strains with resistance to multiple antibiotics (MDR), including those currently used for treatment. The emergence of MDR typhoid has been driven by the global spread of an MDR Salmonella Typhi lineage known as H58 or haplotype 4.3.1. Thus, typhoid represents an exemplar of how MDR is threatening treatment at a global level.

**Aim:** To develop a platform for genomic surveillance of *Salmonella Typhi* to inform public health action.

**Methods:** We developed WGSA.net, a web application that maps over 2,400 *Salmonella* Typhi public genomes onto geographical space and predicts their antimicrobial resistance profile, with the ability to add new data rapidly. Users can analyse their own genomes or browse existing public collections.

**Results:** WGSA performs two essential tasks for surveillance and epidemiological investigations of *S. Typhi*, i.e., i) placing isolates into lineages and the recently established genotyping scheme, identifying their closest relatives and linking to their geographic distribution, and ii) detecting the presence of genes and mutations associated with antimicrobial resistance, a fundamental phenotype to assess the risk that the isolates pose to public health. Over fifty percent of the genome data currently available in WGSA belongs to the MDR lineage H58.

**Conclusion:** The data made easily accessible in WGSA can help the local investigator rapidly identify the potential source of their isolate and to predict likely resistance phenotype. This approach can be used to underpin the surveillance of typhoid and MDR, both locally and globally.
Serotype distribution and relatedness between invasive versus intestinal non-typhoidal Salmonella isolates in children in the Democratic Republic of the Congo

Phoba M.F., Barbé B., Post A., Ley B., Bertrand S., Pululu C., Van Puyvelde S., Debonggraeve S., Lunguya O., Jacobs J.

1Department of Microbiology, National Institute for Biomedical Research, Kinshasa, Democratic Republic of the Congo; 2Department of Microbiology, University Teaching Hospital of Kinshasa, Kinshasa, Democratic Republic of the Congo; 3Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium; 4Belgian National Reference Centre for Salmonella, Scientific Institute of Public Health (WIV-ISP), Brussels, Belgium; 5Bacteriology service, Saint Luc Hospital, Kisantu, Democratic Republic of the Congo; 6Department of Biomedical Sciences, Institute of Tropical Medicine, Antwerp, Belgium; 7Department of Microbiology and Immunology, KU Leuven, Belgium

Introduction: Non-typhoidal Salmonella (NTS) are a frequent cause of invasive infections (such as bloodstream infections) in sub-Saharan Africa but their reservoir remains unknown and there is still debate about the intestinal tract as the portal of entry to subsequent bloodstream invasion.

Aim: To assess (i) the serotype distribution and proportion of NTS recovered from blood and stool samples in children (invasive and intestinal NTS respectively) and (ii) the relatedness between pairs of invasive and intestinal NTS isolates recovered in a same patient.

Methods: Children aged 29 days - 15 years were enrolled upon admission in 4 referral hospitals in the Democratic Republic of the Congo. For children presenting with fever, blood and stool cultures were performed; for children admitted without fever (controls), only stool cultures were performed. Identification and serotyping were done by conventional methods.

The genome of selected paired isolates was Illumina sequenced and phylogenetically analyzed.

Results: Between September 2013 and August 2016, 1522 children with fever and 2368 controls were enrolled. A total of 209 (13.7%) invasive and 132 (3.4%) intestinal NTS isolates were recovered. Invasive NTS comprised the serotypes Typhimurium (65.1%), Enteritidis (33.0%) and others (1.9%); for intestinal NTS (n = 132) the corresponding distribution was 58.3%, 27.3% and 14.4%. The proportion of intestinal NTS in children with fever (91/1522, 6.0%) was significantly higher than among controls (41/2368, 1.7%; (p<0.0001). A total of 71 children grew pairs of invasive and intestinal NTS isolates; identical serotypes within pairs were observed in 52 (73.2%) of pairs. Genomic analysis (done on 32/37 Typhimurium and 12/15 Enteritidis pairs) showed clustering within the majority (41/44, 93.2%) of pairs; median number of single nucleotide polymorphisms among pairs was 1 (range 0-192 and 0-16 for Typhimurium and Enteritidis isolates respectively).

Conclusion: The proportion of intestinal NTS was significantly higher among children admitted with fever versus controls – but still low (6.0%). Proportions of Salmonella Typhimurium and Enteritidis among invasive and intestinal isolates were similar. Genomic analysis showed clustering between the majority of paired invasive and intestinal isolates. The present results add to the evidence of the intestinal tract as the portal of entry for invasive NTS infections.
ZikaPLAN introduction - Epidemiology and geographic spread
Annelies Wilder-Smith

ZikaPLAN

Funded by the European Union’s Horizon 2020 Research and Innovation Programme, the ZikaPLAN initiative combines the strengths of 25 partners in Latin America, North America, Africa, Asia, and various centres in Europe to address the urgent research gaps (WP 1-8) in Zika, identifying short- and long-term solutions (WP 9-10) and building a sustainable Latin American EID Preparedness and Response capacity (WP 11-12). We will conduct clinical studies to further refine the full spectrum and risk factors of congenital Zika syndrome (including neurodevelopmental milestones in the first 3 years of life), and delineate neurological complications associated with Zika due to direct neuroinvasion and immune-mediated responses. Laboratory based research to unravel neurotropism, investigate the role of sexual transmission, determinants of severe disease, and viral fitness will envelop the clinical studies. Burden of disease and modelling studies will assemble a wealth of data including a longitudinal cohort study of 17,000 subjects aged 2-59 in 14 different geographic locations in Brazil over 3 years. Data driven vector control and vaccine modelling as well as risk assessments on geographic spread of Zika will form the foundation for evidence-informed policies. The Platform for Diagnostics Innovation and Evaluation will develop novel ZIKV diagnostic tests in accordance with WHO Target Product Profiles. Our global network of laboratory and clinical sites with well-characterized specimens is set out to accelerate the evaluation of the performance of such tests. Based on qualitative research, we will develop supportive, actionable messages to affected communities, and develop novel personal protective measures. Our final objective is for the Zika outbreak response effort to grow into a sustainable Latin-American network together with the other two EU funded Zika research consortia. To this end we will engage in capacity building in laboratory and clinical research, collaborate with existing networks to share knowledge and tackle regulatory and other bottlenecks.

Here we present data on the evolution of the Zika outbreak and model and predict further geographic spread.

ZIKAlliance introduction - Zika seroepidemiological studies
Xavier de Lamballerie

ZIKAlliance

Presentation of the ZIKAlliance consortium:
ZIKAlliance is a multinational and multi-disciplinary research consortium comprised of 53 partners worldwide and coordinated by Inserm, the French National Institute of Health and Medical Research. ZIKAlliance is funded by the European Union’s Horizon 2020 Research and Innovation Programme. The project investigates clinical, fundamental, environmental and social aspects of ZIKV infection. In particular, ZIKAlliance will focus on the impact of ZIKV infection during pregnancy and the natural history of ZIKV in humans and their environment. In collaboration with two other EC funded consortia (ZikaPLAN and ZIKAction), ZIKAlliance will also work on the development of a preparedness platform in Latin America and the Caribbean.

Update on Zika virus sero-epidemiological studies:
Prevalence studies are of utmost importance specifically for public health management of the Zika virus outbreak, in particular to estimate the susceptibility of populations to infection. They are specifically difficult in the case of Zika virus infection because a large majority of cases do not attract medical attention (asymptomatic or pauci-symptomatic presentations). Surveillance of clinical suspected cases is therefore poorly efficient. Seroepidemiological studies can provide a better estimate of the immunization rate in a population, but are hampered by technological constraints due to cross reactivity between Zika virus an other flavivirus antigens. The lecture will provide an update on Zika virus seroepidemiological studies in the New World, the Old World and the Pacific Islands, with focus on recent results produced in the framework of the ZIKAlliance project.
Zika virus epidemiology and geographic spread in Jamaica

Webster-Kerr KR\textsuperscript{1}, Christie CDC\textsuperscript{2}, Grant A\textsuperscript{1}, Chin D\textsuperscript{1}, Burrowes H\textsuperscript{1}, Clarke K\textsuperscript{1}, Wellington I\textsuperscript{1}, Shaw K\textsuperscript{1}, De La Haye W\textsuperscript{1}

\textsuperscript{1}Ministry of Health, Kingston, Jamaica; \textsuperscript{2}University of the West Indies, Department of Child (Pediatrics) and Adolescent Health, Mona, Kingston 7, Jamaica

\textbf{ZikAction project}: Funded by the European Union’s Horizon 2020 Research and Innovation Programme, the ZikAction research consortium brings together 14 partners across South and Central America, the Caribbean and Europe with the complementary goals of 1) developing a multidisciplinary multinational ready-to-act network capable of rapidly addressing any maternal and paediatric research need arising from (re-)emerging infectious diseases including Zika virus and 2) conducting an interdisciplinary programme of research studies within this network to address key knowledge gaps relating to ZIKV epidemiology, natural history and pathogenesis, with a particular emphasis on maternal and child health.

\textbf{Introduction}: Preparedness for the Zika virus epidemic in Jamaica commenced in May 2015 when Zika arrived in the Americas. Zika infection was classified as a Class 1 Notifiable Disease and incorporated in the integrated arbovirus surveillance system. The national response commenced on January 29, 2016 on identification of the first case of Zika infection in a four year old child who travelled back from Texas, USA with her family.

\textbf{Aim}: We present the epidemiology and geographic spread of the ZIKV epidemic in Jamaica, a Caribbean Island with population of 2.7 million, where 1,782,000 were projected to become infected with Zika, 310,500 were estimated to be ill enough to require medical attention and 311 to 400 were estimated to develop severe complications (eg., Guillain Barre Syndrome).


\textbf{Results}: As at 28 October, 2017, there were 9,974 notifications, of which 6,891 (69\%) were suspected to have zika and 158 (2.3\%) had a positive laboratory result (154 PCR confirmed). Rash (84\%), fever (49\%) and arthralgia (35\%), were the most common symptoms. The outbreak began in the eastern parishes then spread to the north westerly parishes of the island. There were 721 notifications in pregnancy, of which 621 (86\%) were suspected to be Zika and 63 (1\%) were lab-confirmed. Among congenital syndromes possibly associated with Zika, there were five with microcephaly of which three were severe microcephaly. Guillain Barre Syndrome (GBS) was suspected in 27 (using Brighton’s criteria) and a GBS variant in 7. Of these, laboratory evaluation included one with confirmed Zika, two with presumptive Zika and two with confirmed chikungunya. There was one case with Zika PCR-confirmed meningitis. Simultaneously 2,116 cases of dengue fever were reported and 396 notifications of chikungunya were received. Dengue serotype 3 and 4 predominated and severe dengue with haemorrhagic fever was seen.

\textbf{Conclusion}: These complications may be related to the Zika, Dengue and Chikungunya which were all circulating concurrently in Jamaica during 2016.
**3OS1.4**  
**Risk estimates for birth defects**  
Thomas Jaenisch  
ZIKAlliance

**Introduction:** Based on official reporting, we observe a striking imbalance in the relative frequency of microcephaly and other congenital abnormalities between the Northeast of Brazil and other Brazilian regions, and also comparing to other countries in Latin America and the Caribbean. We evaluated the variability of the risk estimates for microcephaly by state in Brazil. For the state of Pernambuco, where figures are also available stratified by different microcephaly definitions, and in addition per week during the year 2015, we compare additional sources of variability.

**Results:** Absolute risk estimates were calculated for two potential infection rates, corresponding to 10% or 50% of the pregnant women infected with ZIKV during pregnancy. Relative risk estimates were calculated using the reported background frequency estimates of microcephaly. The absolute risk of microcephaly varied largely between 0.03% and up to 17% over geography and depending on the definition used.

**Conclusions:** The large variability of in the risk of severe congenital abnormalities associated with ZIKV infections remains largely unexplained. The observed magnitude of the variability calls for the investigation of potential effect modifiers as well as the need for robust measures of ZIKV infections and clear endpoints for congenital malformations. Anecdotal evidence suggests that the risk of microcephaly is increased in young women with poor socio-economic status. Other potential co-factors or effect modifiers include environmental toxins, interaction with sexually transmitted diseases, behaviour (e.g. abortion rates, reporting bias), and the interaction with past dengue infections. We will report about first findings within the Zikalliance cohorts, addressing the probability of any of the co-factors currently discussed fitting the imbalance of microcephaly frequencies observed.

**3OS1.5**  
**Children and Zika: How to approach this challenge after birth?**  
Soriano-Arandes A.¹, Lundin R.², Ades T.³, Giaquinto, C.⁴, Thorne C.⁵  
¹Paediatric Infectious Diseases and Immunodeficiencies Unit, Unit of International Heath Drassanes-Vall d’Hebron, Vall d’Hebron Research Institute, Barcelona, Spain

There is a lack of evidence to demonstrate the incidence of severe disease manifestations, risk factors, and long-term outcomes of postnatally acquired ZIKV/DENV/CHKV infections in children. Also, ZIKV has been shown to be able to replicate after birth in the central nervous system in healthy babies at birth. Moreover, there is a lack of knowledge about the natural history of infection, and natural serological response. To describe the clinical spectrum of ZIKV/DENV/CHIKV infection, assess the association between these infections and child outcomes, and identify factors that may modify these outcomes, it is essential to understand the range of possible outcomes and the measurement techniques most adapted to endemic areas for these infections. This information will contribute directly to a planned prospective cohort study in the ZIKAction project assessing the natural history of ZIKV infection in children over time in various countries with circulating virus in South America, the Caribbean and West Africa. Key dimensions of child outcomes potentially related to ZIKV/DENV/CHIKV infection, including neurologic, aurological, visual, will be outlined, with in-depth discussion of the most widely used and best adapted instruments and methodologies currently in use in arbovirus endemic and epidemic areas. We will discuss the objectives and design of a prospective cohort of children infected with ZIKV in the context of ZIKAction.

**3OS1.6**  
**Neurological complications of Zika in adults**  
Tom Solomon  
ZikaPLAN

As well as causing a dengue-like fever-arthralgia-rash syndrome Zika is now recognised as a cause of neurological disease especially Guillain-Barré syndrome (GBS). The risk of GBS following Zika is about 24 per 100,000 cases, making it comparable to other well recognised triggers such as *Campylobacter jejuni*. However, GBS following Zika is unusual in occurring days, rather than weeks, after the acute infection. There is also a tendency for facial nerve involvement. Acute inflammatory demyelinating polyneuropathy (AIDP) is the most common subtype of GBS following Zika, but axonal damage also occurs. Zika also appears able to invade the central nervous system to cause encephalitis, though its importance, in relation to other causes remains to be determined. Detailed epidemiological and disease mechanism studies are underway to try and understand the reasons behind these differing presentations, and to point the way toward possible treatments.
Controversies around artemisinins
Krishna S.
Institute for Infection and Immunity St. George’s, University of London, UK

Artemisinins are achieving growing importance in medicine that reaches beyond their essential contribution to antimalarial efficacy in combination therapies. Their discovery earned recognition through award of a Nobel prize. The mechanisms of action of artemisinins including the role of their unusual endoperoxide bridge remains unclear. In this talk, I review some of the history of discovery of artemisinins and some work that my group has been involved with on their mechanisms of actions. Newer findings will also be discussed, including observations on identification of artemisinin targets using labelling approaches. If discussing mechanisms of action of artemisinins is insufficiently controversial, I will also explore the term ‘artemisinin resistance’ and what its understanding contributes to that of treatment failures associated with artemisinin combination therapies. Finally, the use of artemisinins in the management of cancers will be outlined.

State-of-the-art of the clinical development of KAF156, a novel antimalarial
Grobusch M.P.
Center of Tropical Medicine and Travel Medicine, Department of Infectious Diseases, Division of Internal Medicine, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

KAF156 is a novel antimalarial (first in the class of imidazolopiperazines) with a broad spectrum of antiplasmodial activity ranging from pre-erythrocytic liver stages to both asexual and sexual blood stages. KAF156 has proven promising in preclinical studies and early pharmacokinetic, safety, and tolerability studies in humans, to that end that it is currently undergoing further phase 2 clinical development.

The talk will summarize briefly key findings from work published to date, and provide insight into the state-of-the-art of the ongoing development at time point of presentation.

OZ-Piperaquine as single dose antimalarial: A multinational phase IIb study
Ramharter M.
Division of Infectious Diseases and Tropical Medicine, Department of Medicine I, Medical University of Vienna, Vienna, Austria

Background: The clinical development of a single encounter treatment for uncomplicated malaria has the potential to significantly improve effectiveness of antimalarial therapy and would constitute an important tool for malaria elimination programs. Exploratory data suggested that artefenomel – a synthetic endoperoxide antimalarial – in combination with piperaquine has the potential to achieve satisfactory cure rates as a single dose therapy. The primary objective of the study was to determine whether a single dose of artefenomel (800mg) plus PQP in ascending doses of 640, 960 or 1440 mg is an efficacious treatment for uncomplicated P. falciparum malaria.

Methods and Findings: Patients in six African countries and in Vietnam were randomized to treatment with follow up for 42-63 days. Efficacy, tolerability, safety, pharmacokinetics were assessed. Patients (n=437) in Africa (n=355) and Vietnam (n=82) were randomized and received treatment, with 85% of the total population being children <5 years of age (all African). ACPR28 in the PP population (95%CI) was 70.8% (61.13; 79.19), 68.4% (59.13; 76.66), and 78.6% (70.09; 85.67) for doses of 800mg artefenomel with 640 mg, 960 mg and 1440 mg of PQP respectively, with no clear dose trend evident. Within the African population, the concentration–response relationship for artefenomel and PQP did not differ with age (although numbers of patients >5 years was relatively small), rather, the lower efficacy was due to lower artefenomel (and to a lesser extent piperaquine) exposure. The most significant tolerability finding was vomiting rate (28.8%). Asymptomatic QTc increases from baseline were frequently reported as expected for PQP.

Conclusion: In this first clinical trial evaluating a single encounter antimalarial therapy none of the treatment arms reached the target efficacy of > 95% PCR-adjusted ACPR at Day 28. Achieving very high efficacy following single dose treatment is challenging but remains a key development goal.
3OS2.4  
**DSM265, a promising novel antimalarial compound for chemoprophylaxis**  
Sulyok M.1,2, Rückle T.3, Roth A.1,2, Mürbeth R. E.1,2, Chalon S.3, Kerr N.3, Lalremruata A.1,2, Möhrle J. J.3, Kremsner P. G.1,2, Mordmüller B.1,2,1

1Institute of Tropical Medicine, Eberhard Karls University, Tübingen, Germany; 2German Center for Infection Research, partner site Tübingen, Eberhard Karl University, Tübingen, Germany; 3Medicines for Malaria Venture, Geneva, Switzerland

**Introduction**: DSM265 is a novel antimalarial compound targeting the dihydro-orotate-dehydrogenase enzyme in plasmodia. Its favourable pharmacokinetic profile, characterized by a long half-life makes it a promising candidate for a once weekly prophylaxis.

**Aims**: Our aim is to provide a current overview on the status of this compound with a specific focus on the results of ongoing and completed early stage clinical studies with regard to its chemoprophylactic potential.

**Methods**: Data were provided by the Sponsor and an unrestricted search with the keyword ‘DSM265’ in PubMed and clinicaltrials.gov databases was performed on Mar 29, 2017.

**Result**: Out of the six identified early clinical trials. One investigated an alternative formulation, two CHMI studies focused on the treatment of blood stage P. falciparum malaria, one was a Phase2a/POC against P. vivax/P. falciparum infection, and two other CHMI studies investigated prophylaxis of P. falciparum.

At the time of writing, two of the six clinical trials were published: this includes one of the CHMI study testing chemoprophylactic activity.

**Conclusions**: Published and preliminary results of completed early phase studies show a promising profile of DSM265. Once weekly prophylaxis and single dose treatment of P. falciparum are two therapeutic options for DSM265. Further dose finding studies are needed.

3OS2.5  
**Fosmidomycin-piperaquine as non-artemisinin-based combination therapy for acute uncomplicated Plasmodium falciparum malaria**  
Mombo-Ngoma G.1, Manego Zoleko R.1, Remppis J.1, Sievers M.1, Lilian E.1, Lell B.1, Hutchinson D.2 and Kremsner P.G.3

1Centre de Recherches Médicales de Lambaréné (CERMEL), Lambaréné, Gabon; 2Jomaa Pharma GmbH, Hamburg, Germany; 3Institute for Tropical Medicine, University of Tuebingen, Germany; Jomaa Pharma GmbH, Hamburg, Germany

**Introduction**: The combination of fosmidomycin and piperaquine, with the attributes of rapid blood schizonticidal activity and prolonged post-treatment prophylaxis, is being developed to meet the challenge of emerging artemisinin resistance. As a potent inhibitor of 1-Deoxy-D-xylulose 5-phosphate (DOXP) reductoisomerase, fosmidomycin possesses a unique mode of action through blockade of the non-mevalonate pathway of isoprenoid biosynthesis. In contrast, piperaquine is thought to bind to heme, inhibiting its detoxification within the malaria parasite. It is further postulated that the toxic build-up of heme increases the membrane permeability of red cells favoring the influx of fosmidomycin.

**Methods**: The efficacy, tolerance and safety of the combination for the treatment of acute uncomplicated Plasmodium falciparum mono-infection were evaluated in a proof of concept phase II study in Gabon. Adults and children with initial parasite counts between 1,000 and 150,000/µL have been treated with fosmidomycin, in twice daily doses of 30mg/kg, and piperaquine, in a once daily dose of 16mg/kg, orally for three days and followed-up for 63 days. The primary efficacy endpoint was the per protocol PCR-corrected Day 28 cure rate.

**Findings**: Day 28 cure rate was 100% (95% confidence interval: 96-100) overall and in all age groups, as at Day 7 (100% [95%CI: 96-100]) and Day 63 (100% [95%CI: 95-100]). Many subjects (n=14) had recurrence of asexual parasites between Day 28 and Day 63 which were shown by PCR to be new infections. There were rapid parasite clearance (36h) and clinical recovery (fever clearance time 12h).

**ECG findings** consisted of QTc prolongation with the longest mean QTcF and QTcB by time point observed between 6 and 8 hours after dosing. Mean QTc changes from baseline reached levels as high as 27ms for QTcB and 33ms for QTcF. Tolerance was excellent and there were no drug-related safety issues.

**Conclusions**: Fosmidomycin combined with piperaquine have been shown to be highly efficacious in an area of intense malaria transmission. Dose optimisation studies with the dual aim of achieving a reduction in the dose of fosmidomycin within a therapeutic regimen of once daily dosing are encouraged.
3OS3.1
Molecular diagnosis of Leishmania species in European travel clinics
I. Felger, G. Van der Auwera on behalf of LeishMan Consortium
1Swiss Tropical and Public Health Institute, Basel, Switzerland
2Institute of Tropical Medicine, Antwerp, Belgium
3http://www.tropnet.eu/index.php?id=103

Imported cases of leishmaniasis have become more frequent in Europe over the past years due to increased travel to risk areas. Standardized species identification and treatment protocols are warranted to provide the patients with the best possible treatment. Most laboratories perform a 2-step diagnostic approach: quantitative PCR for detection of positivity followed by amplicon sequencing-based genotyping. 16 European laboratories compared the performance of their currently used strategies for genotyping Leishmania species. Five different molecular targets were used. The outcome showed a number of discrepancies owing to marker resolution or data analysis strategy. These issues as well as quality control measures will be discussed.

3OS3.2
The first malaria molecular EQA scheme launched By Uk Neqas(P) [United Kingdom National External Quality Assessment Service Parasitology]
Jaya Shrivastava, Agatha Christie Saez, Monika Manser, Debbie Nolder, Spencer Polley and Peter L Chiodini
1Department of Clinical Parasitology, Hospital for Tropical Diseases, London, UK
2PHE Malaria Reference Laboratory, London School of Hygiene and Tropical Medicine, London, UK

Introduction: Rapid diagnostic tests (RDTs) and microscopy remain the primary diagnostic tools for confirmation and management of cases of suspected clinical malaria. However, their sensitivity is too limited for efficient detection of low-density parasitaemia or sub-microscopic infections. Many molecular assays are increasingly available, which provide better diagnostic performance; however in low transmission settings they are prone to reproducibility issues.

Aim: Provide a general overview of emerging Molecular diagnostic assays in the field of Malaria; and to highlight the immediate need for a robust EQA scheme of international proportions.

Methods: Discuss the good, the bad and problematic features of molecular assays in Malaria diagnostics. To address the growing use of molecular assays in diagnosis and ensure data generated are reliable and comparable; UKNEQAS(P) developed a new EQA scheme, Malaria Molecular.

Results: UKNEQAS(P) ran a pre-pilot followed by a pilot survey prior to the scheme going live. For the pre-pilot, two distributions each containing eight lyophilised blood specimens were dispatched to 35 participants in 24 countries. Specimens contained parasite densities from 1 – 20 parasites/µL. The pilot also comprised two distributions of eight lyophilised blood specimens which were sent to 25 participants in 20 countries. Specimens contained parasite densities from 1 – 40 parasites/µL. The full scheme went live in January 2016. Four distributions, each containing 4 samples, are sent annually. Parasite densities range from 18 - 10,000 parasites/mL. Samples include single infections of Plasmodium falciparum, Plasmodium vivax, Plasmodium malariae and Plasmodium ovale and negatives. Participants report on the presence or absence of malarial nucleic acid using qualitative or quantitative methods.

Conclusion: UKNEQAS(P) has established a successful Malaria Molecular EQA scheme. Results were in agreement with intended results for most participants. Errors were detected which will enable laboratories to investigate and improve performance ultimately leading to improved patient outcomes.
**3OS3.3**

PCR as a first line diagnostic tool for diagnosis of intestinal parasitic infections in a clinical laboratory  
Verweij J.J.¹

¹ Laboratory for Medical Microbiology and Immunology, Elisabeth Tweesteden Hospital, Tilburg, Netherlands

**Introduction:** For many years, DNA-based methods are available in most clinical microbiology laboratories, however, until recently these tools were not routinely exploited for the diagnosis of parasitic infections. Laboratories were reluctant to implement PCR not knowing how to incorporate such an approach in the algorithm of tools available for the most accurate diagnosis of a large variety of parasites.

**Aim and Methods:** Review studies on the prevalence of intestinal parasitic infections in industrialized setting in different patient populations. Discuss the prejudices, pitfalls and algorithm to apply DNA-based methods for the diagnosis of intestinal parasitic infections in a clinical laboratory.

**Results:** Detection rates of the parasitic infections using PCR are increased as compared with microscopy. In most settings, the diversity and prevalence of intestinal parasites besides *Giardia* and *Cryptosporidium* is very low.

**Conclusion:** The diversity of parasites that one can expect in most settings is far less than the parasitological textbooks make you to believe. Therefore, using the classical algorithm based on population, patient groups, immune status, travel history etc. is also applicable to decide to perform additional techniques when a multiplex PCR panel is used as a first line diagnostic.

**References:**

---

**3OS3.4**

RDTs in malaria diagnosis: Pushing new boundaries with lateral flow assays  
Weigl H. B., Nichols P. K., Acestor N., Bell D.  
Global Good Fund / Intellectual Ventures Laboratory, Seattle, USA

**Introduction:** Effective management of malaria, along with other diseases common to populations in poorly-resourced health systems, is dependent on the availability of simple and low cost, but accurate, diagnostics. Since the 1990s, the increasing use of lateral flow assays (commonly called rapid diagnostic tests – RDTs) has transformed malaria management, replacing microscopy as the primary mode of diagnosis. However, the limitations of the technology have become increasingly apparent. Malaria elimination programmes have added new demands on RDTs performance, while extension to some other common diseases has been limited by inadequate sensitivity.

**Methods and Results:** Over the past 3 years, we have conducted an intensive review of the underlying mechanisms that determine the sensitivity and specificity of lateral flow assays, and through introduction of various innovations, including nanoparticle optimization, flow rate management and plasma separation, have pushed down the limits of detection to low picogram levels. Sensitivity can be further enhanced by optimization of emerging reader technologies that excite nanoparticle conjugates to push detection below visual thresholds. PCR-level detection of malaria parasites in a familiar, easily manufacturable, and low cost field-applicable format is becoming possible.

In parallel, a review of data on both malaria and non-malaria antigen levels in human hosts raises a range of applications that can now be assessable by point of care diagnosis and low-cost screening, extending the scope of malaria elimination and screening programmes and broadening the range of pathogen biomarkers that could feasibly and accurately be detected by health workers using these emerging technologies.

**Conclusion:** After transforming management of malaria and other diseases over a decade ago, performance and applicability of rapid testing has remained relatively static, while attention has turned to new, sensitive but more complex and costly, technologies. Recent developments in lateral flow technology promise a rapid expansion in point of care testing over the coming decade, transforming the ability to manage both malaria elimination and a range of high-burden infectious diseases.
Effective detection of asymptomatic malaria infections across geographically diverse areas using loop-mediated isothermal amplification

Xavier C. Ding1, Babacar Faye2, Dionicia Gamboa3, Jennifer Luchavez4, Kigbafori Silué5, Rushini Perera6, Peter L. Chiodini6, Iveth J. González1

1 FIND, Geneva, Switzerland
2 Service de Parasitologie, Faculté de Médecine, Université Cheikh Anta Diop, Dakar, Senegal
3 Departamento de Ciencias Celulares y Moleculares, Facultad de Ciencias y Filosofía & Instituto de Medicina Tropical Alexander Von Humboldt, Universidad Peruana Cayetano Heredia, Lima, Peru
4 Research Institute for Tropical Medicine, Alabang, Metro Manila, The Philippines
5 Département Environnement et Santé, Centre Suisse de Recherches Scientifiques en Côte d’Ivoire, Abidjan, Côte d’Ivoire
6 Department of Clinical Parasitology, Hospital for Tropical Diseases, University College London NHS Foundation Trust, London, UK

Introduction: In all malaria endemic settings and especially in areas approaching elimination, asymptomatic malaria infections significantly contribute to the continued disease transmission and represent an infectious reservoir that needs to be identified and treated. The majority of asymptomatic infections harbour low parasitaemia and cannot be detected by classical diagnostic tests, such as light microscopy or rapid diagnostic tests, because of the limited analytical sensitivity of these assays. Loop-mediated isothermal amplification (LAMP) is a nucleic acid amplification method with a high sensitivity, similar to PCR, and a comparatively simplified workflow, enabling its implementation in simple rural laboratories.

Aim: The aim of this work was to evaluate the performance of LAMP for the on-site detection of Plasmodium falciparum asymptomatic infections as compared to nested PCR used as reference standard.

Methods: Screening campaigns using LAMP have been conducted in five different countries and additional blood samples were collected at each site upon LAMP results availability from approximately 25 P. falciparum infected and 100 Plasmodium negative asymptomatic adult volunteers for retrospective analysis by nested PCR (nPCR). The performance of LAMP was evaluated in comparison to the nPCR reference standard.

Results: The overall LAMP sensitivity and specificity values were found to be close to those of nPCR at 89.7% and 96.3%, respectively (n=498). In all countries, the implementation of the LAMP assay at the sample collection site or nearby enabled the rapid identification of asymptomatic individuals infected by P. falciparum and their treatment according to national guidelines.

Conclusion: By rapidly identifying on-site nine tenth of all asymptomatic P. falciparum infections detected by nPCR, LAMP demonstrated excellent performances across five different sites. The possibility to deploy this relatively simple assay in rural laboratories and health centres opens new possibilities for the implementation of effective screen and treat campaigns to support malaria elimination efforts.
3OS4.1
Nucleic acid amplification techniques, the future of malaria diagnosis?
Polley S.D.1, Perera P.2, Chioldini P.L.2
1Department of clinical Parasitology, Health Services Laboratories LLP Analytics, London; 2Hospital for Tropical Diseases, University College London Hospitals NHS Foundation Trust, London, UK

Introduction: The WHO recommends biological diagnosis of malaria, where possible, due to a significant overlap of conditions caused by this disease with others endemic in the same geographical locations. Until the recent large scale adoption of RDTs, light microscopy remained the gold standard for malaria diagnosis. The rise in popularity of RDTs came from their capacity to diagnose malaria quickly and simply with a sensitivity approaching that of the best microscopists but without extensive training of the operator. The advent of nucleic acid based diagnostics has resulted in a technology that exceeds microscopy in terms of sensitivity but, on the whole, is still optimal for diagnosis within a specified two hour time frame. Simplified reactors, direct amplification from blood and rapid detection of amplicons are reducing this roadblock for PCR technologies, whilst isothermal amplification technologies have effectively already sidestepped it already. A recent high through put purification kit for use with Loop Meditated Amplification technology has resulted in the capacity to screen hundreds of samples per day at near field sites. What utility will such technologies provide in European laboratories and how best can we use them? Can technological improvement of RDTs or even light microscopy challenge these technologies yet such that NAATs will become redundant before they are even deployed or do we need to continually push the bar for sensitivity and specificity?

3OS4.2
New developments in the diagnosis of schistosomiasis in European travellers and migrants: Will PCR and the detection of CCA and CAA replace microscopy?
Van Lieshout L.1 Van Esbroeck M.2
1Dept. of Parasitology, Leiden University Medical Center, Leiden, The Netherlands; 2Dept. of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium

Introduction: Microscopic detection of Schistosoma eggs in stool and urine is known for its low sensitivity in diagnosing light infections. Hence, most European laboratories use serology as their first line diagnostic procedure because the detection of schistosome specific antibodies in serum is known to be sensitive and specific, particularly in travellers who have been exposed for the first time. However, serology cannot distinguish active from past infection and it may take up to 6 to 10 weeks for seroconversion to occur. Alternative diagnostic tests which can demonstrate active infection, namely real-time PCR and circulating antigen detection, are progressively used as complementary diagnostic procedures. The adult worm-derived schistosome antigens, CCA (circulating cathodic antigen) and CAA (circulating anodic antigen), have been most studied so far.

Aim: To discuss the position of innovative diagnostic methods for the detection of Schistosoma infections in international travellers and migrants.

Methods: Examples will be given of recent European studies employing assays for the detection of Schistosoma DNA by real-time PCR, as well as lateral flow tests for the detection of CCA and CAA within routine diagnostic settings. The need to differentiate Schistosoma species by the detection of species-specific DNA in clinical samples will be further discussed.

Results: Detection of Schistosoma DNA in serum, faeces or urine by real-time PCR is increasingly used as an alternative for microscopy and has a clear value for application in routine diagnostics. However disadvantages are the cost and applicability of this technique on large amounts of samples. The urine based point-of-care (POC)-CCA test has found to be a reliable, sensitive and easy to use commercially available assay for the diagnosis of chronic S. mansoni infections as seen in migrants. However this test seems not sensitive enough for the detection of other schistosome species or the detection of Schistosoma infections in travellers. Promising findings have emerged from some recent studies applying the ultrasensitive and highly specific laboratory-based lateral flow test for the quantification of CAA in urine or serum.

Conclusion: Recent developments in the diagnosis of schistosomiasis seem likely to lead to important changes in the approach to diagnosing schistosomiasis in non-endemic settings.
Is there a need to screen asymptomatic migrants for parasitic infections?
Lier T.1,2
1Parasitology and Waterborne Pathogens, Public Health Agency of Sweden, Solna, Sweden; 2Dept. of Microbiology and Infection Control, Univ. Hospital of North Norway, Tromsø, Norway

Introduction: Migrants are very heterogeneous. Few European countries have implemented screening for parasites in their health assessment guidelines for migrants. Most countries seem to offer testing in symptomatic cases, only. This is in contrast to US, Canadian and Australian guidelines for newly arrived refugees that recommend either preemptive anthelmintic treatment or variations of screening for soil-transmitted helminthes (STH), Strongyloides, Schistosoma and malaria even in asymptomatic individuals. There can be different motifs for screening of migrants; to prevent spread of infection to the receiving society or to prevent future consequences to the health of the individual migrant. There is no data supporting that migrants pose a significant parasite infection risk to the society. One explanation for the variation in screening practice might be the lack of data on cost-effectiveness of screening asymptomatic migrants. Screening can be very resource demanding, especially if it involves microscopy of fecal samples. There is a lack of knowledge regarding the long-term effects of parasite infection in asymptomatic individuals after their arrival in a country where acquiring new parasite infections comes to a halt. Soil-transmitted helminths (STH) may contribute to malnutrition and delayed physical and mental development in children. Hookworms may lead to anemia in children and women. Whether this is a significant problem after emigration is uncertain. Schistosoma and Strongyloides warrants special mentioning, as both infections are long-lived and can cause serious complications even years after emigration.

Conclusion: Few European countries seems to do parasite screening of asymptomatic migrants, possibly due to lacking evidence on benefit and cost-effectiveness. The main focus should be preventing future consequences to health. To keep the cost down, screening can be limited to migrants that are especially vulnerable and with expected high prevalence due to country of origin or conditions during migration. One option could be to screen migrants, or subgroups of migrants, from highly endemic areas for antibodies against Schistosoma and Strongyloides. Optionally could also small children from highly endemic areas be screened for STH in fecal samples. On the other hand might screening of asymptomatic migrants from the Middle East not be cost-beneficial.

Will PCR replace microscopy in the diagnosis of imported intestinal parasites?
Formenti F.1, Buonfrate D.1, Valerio M.2, Perandin F.1, Pajola B.1, Mistretta M.1, Bisoffi Z.1
1Centre for Tropical Diseases, Sacro Cuore Don Calabria Hospital, Negrar, Verona, Italy
2Medical Oncology Unit, Cancer Care Center, Sacro Cuore Don Calabria Hospital, Negrar, Verona, Italy

Introduction: Parasitological diagnosis has traditionally relied on the diagnostic skill of highly experienced/trained microscopists in referral centres. In the last couple of decades, alternative methods, especially based on molecular biology, have been increasingly used, and microbiology labs are increasingly undergoing a process of automation. However, good microscopy is not “parasite-specific” as are molecular methods, and, should microscopy be abandoned, rare, or less rare parasites that are not specifically targeted would be missed. On the other hand, microscopy has traditionally been performed on serial samples, collected in different (usually three) days.

Aim: We discuss the pros and cons of a new routine for referral parasitology labs, based on the exam of one single faecal sample (with obvious logistical advantages) that is submitted to microscopy after concentration, and to multiplex qPCR selected on the basis of the epidemiological risk.

Methods: retrospective analysis of parasitological exams (3 samples in different days as per old routine) compared with a new routine (single sample submitted to both microscopy and multiplex qPCR). The sensitivity of both routines is compared.

Results: for all the protozoan infections considered (Giardia intestinalis, Blastocystis spp, Dientamoeba fragilis, Entamoeba hystolítica/dispar), the new routine resulted significantly more sensitive.

Conclusion: A new routine for a referral lab, based on one single fecal sample and maintaining classical microscopy in combination with molecular biology seems a promising approach.
3OS5.1
Nodding syndrome; Clinical manifestations, complications and treatment
Idro R.1,2, Anguzu R1, Akun P1, Ogwang R1, Opar B1, Vincent A.1, Marsh K.2
1Dept. of Paediatrics and Child Health, Makerere University College of Health Sciences, Kampala, Uganda; 2Centre for Tropical Medicine and Global Health, University of Oxford, Oxford, UK; 3Clinical Services, Ministry of Health, Kampala, Uganda; 4Neurosciences, Weatherall Institute of Molecular Medicine, John Radcliffe Hospital, Oxford, UK

Introduction: Nodding syndrome (NS) is a debilitating neurologic disorder affecting children and adolescents in East Africa. We are conducting a series of studies in the most affected districts of Uganda to determine aetiology, pathogenesis and treatments.

Aim: Determine the aetiology and pathogenesis, provide a comprehensive description of clinical features, comorbidities and complications, develop a staging system, supportive treatments and initiate studies of specific treatments.

Methods: First, we conducted a pilot study of 22 patients to describe the clinical features and determine patients’ treatment needs and used this data to develop a supportive treatment program. Secondly, we conducted a detailed clinical, neurophysiologic and imaging study of 223 patients to describe the progressive development of symptoms, complications and comorbidities of NS. Third, based on preliminary aetiology studies, we are enrolling 230 patients in a phase II placebo-controlled trial of doxycycline as treatment.

Results: NS is a neurologic disorder with multisystem involvement. Complications of the untreated disease develop through five worsening clinical stages. Treatment with anticonvulsants and a program of physical, occupational, speech and language, psychological and nutritional rehabilitation therapy improves outcomes, function and wellbeing. The doxycycline trial is due to complete recruitment end of 2017.

Conclusion: The clinical manifestations and function of patients with NS improve with symptomatic treatments. A definitive cure and preventive intervention is awaited.

3OS5.2
Nodding syndrome: Etiology remains unknown
Spencer P.S.1, Palmer V.S.1, Schmutzhard E.2, Winkler A.S.3
1Dept. of Neurology, Oregon Health & Science Univ., Portland, Ore, USA; 2Dept. of Neurology, Med Univ. of Innsbruck, Innsbruck, Austria; 3Centre for Global Health, Inst. of Health & Society, Univ.of Oslo, Norway

Introduction: Nodding Syndrome (NS) is a pediatric epileptic encephalopathy first described in Tanzania, with recent epidemics in South(ern) Sudan (SS) and Uganda (UG: 2000-2013). NS epidemics coincided with civil conflicts in which populations were moved to crowded internal displacement (IDP) camps where infectious disease was rife and food quality poor. International conferences in Kampala (2012) and Gulu (2015) examined NS epidemiology, etiology, classification, clinical features and treatment.

Aim: Examine role of infection in NS.

Methods: Analyze relevant studies.

Results: A 2001 WHO-led study of NS in SS revealed widespread nematode infection, with significant NS case association of both Onchocerca volvulus (OV, OR 9.22, p=00003) and Mansonella perstans (OR 3.22, p=0.005). Later CDC-led studies in SS-UG confirmed the association between NS, OV, and Mansonella sp., but subsequent work has been limited to OV [1]. A recent NIH-led study [2] proposes that NS is an autoimmune-mediated disease triggered by OV antigens. They found autoantibodies to leiomodin-1 (an actin-binding protein) in serum of OV-infected NS patients (54.5%) and OV-infected controls (41.4%), thought to be “pre-NS”. Another recent study [3] reported NS case association with prior measles infection and pointed to time-course and clinical similarities between NS and the post-viral disorder subacute sclerosing panencephalitis (SSPE). Preliminary CDC observations of intranuclear crystalline structures and neurofibrillary tangles in the brains of 3 Ugandan NS patients is consistent with SSPE but not with an autoimmune CNS disorder.

Conclusion: While the cause of NS remains unknown, its acquisition in IDP camps is probable. Malnutrition and infections, notably measles, cause immunosuppression which invite parasites, including opportunistic nematodes. OV is an unlikely cause of NS because they differ markedly in geospatial distribution. Non-neural tissues rich in LMOD-1 are spared in NS, and increased LMOD-1 in NS could result from release of muscle protein during seizure activity.

References:
How politics and research fatigue challenge NS control in Uganda

Irani J.N.¹, Ronse M.¹, Siling K.¹, Rujumba J.², Mwaka A.², Idro R.², Arach J.², Lanyuru D.², Peeters Grietens K.¹, O’Neill S.¹

¹Dept. of Public Health, Institute of Tropical Medicine, Antwerp, Belgium; ²Dept. of Public Health, Makerere University, Kampala, Uganda

* Shared last authorship

Introduction: The first case of Nodding Syndrome was reported in Tanzania more than 50 years ago and several studies have been carried in the region. The cause of the disease, nevertheless, remains unknown and no cure is available. In Northern Uganda, about 3000 individuals suffer from NS in a region that is still recovering from the affects of war.

Aim: To describe the challenges for future research and disease control interventions in Northern Uganda

Methods: Ethnographic research was carried out in 13 villages in the affected districts of Kitgum and Gulu in Northern Uganda. The data-collection methods consisted of participant observation, informal conversations, in-depth interviews and focus group discussions. Sampling was theoretical and data analysis was concurrent to data collection and carried out using NVivo 10.

Results: Two related sets of factors make further progress towards disease control in Uganda challenging. First, NS has become politicised for different reasons including the start of the outbreak during the war, the perceived lack of initial responsiveness from the government, and political propaganda, which lead to conspiracy theories and distrust. Second, and closely related to this politicisation, is research fatigue. Dissemination of research results has been minimal despite a large amount of research carried out, including invasive procedures such as brain autopsies carried out on children and exported to the United States, which has resulted in anger and resentment. This has also led to hopelessness in expectations regarding a potential cure and scepticism towards researchers and the ministry of health. This is complemented by rumours about researchers using samples for personal financial gain and about the government hiding information intentionally.

Conclusion: Current levels of distrust and research fatigue can provide an obstacle for future disease control policies such as distribution of medicine (e.g ivermectin), or voluntary participation in clinical studies. A potential way forward could be inclusion of community involvement and improved dissemination of results.
High prevalence of epilepsy and onchocerciasis after 20 years of ivermectin use in four villages of the Mahenge area in Tanzania

Mmbando B.P., Mnacho M., Makunde M., Kakorozya A., Matuja W., Greter H., Suykerbuyk P., Colebunders R.

1Tanga Research Center, National Institute for Medical Research, Tanga, Tanzania; 2Muhimbili University of Health Sciences, Dar es Salaam, Tanzania; 3Global Health Institute, University of Antwerp, Belgium; 4Enhance Tanzania Foundation, Dar es Salaam, Tanzania

Introduction: A high prevalence of epilepsy has been reported in many onchocerciasis endemic regions. Nodding syndrome, a distinctive form of epilepsy has been reported to occur also only in onchocerciasis endemic regions. Although epidemiological studies underline the association between onchocerciasis and the onset of epilepsy, the causative mechanism is not yet understood.

Aim: To determine the prevalence of onchocerciasis, and prevalence and incidence of epilepsy following long-term use of ivermectin in control of onchocerciasis in the Mahenge area of the Ulanga district in Tanzania.

Methods: The study was conducted in two rural and two semi-urban villages near Mahenge township in the Ulanga district. These villages, particularly the rural ones had been found to have a high prevalence of epilepsy during a survey in 1989. January 2017, we performed a door-to-door epilepsy survey using a 5 questions validated questionnaire, Persons with a positive answer to one of the questions were seen by a neurologist. Clinical, neurological and laboratory examinations were performed in all epilepsy suspects. We also tested children 7-10y old for the presence of Onchocerca volvulus (OV) antibodies and performed a rapid epidemiological mapping of onchocerciasis (REMO).

Results: 5160 (median age 18.5y, 47.8% male) individuals from 1172 households were registered. 264 (5.1%) individuals were suspected to have epilepsy during screening and 2.04% were confirmed to have epilepsy, 2.84 % in the rural vs 1.32% in the semi-urban villages, p<0.001. The incidence of new onset epilepsy was 63.8 per 100,000 persons/y.

In children 7-10 y old the prevalence of OV16 positivity was 42.6% in the rural and 4.7% in the semi-urban villages, p=0.001. Among men > 20 years old the prevalence of OV16 positivity was 65% and 1.8% were found to have onchocerciasis nodules.

Conclusion: Despite the use of ivermectin for about 20 years, the prevalence of onchocerciasis and epilepsy remains high in the two rural villages the Mahenge area with no substantial change in the incidence and prevalence of epilepsy compared 1989. These findings suggest a suboptimal functioning of the onchocerciasis control programme. Reasons for persistence of onchocerciasis and epilepsy needs further investigations and strengthening of the onchocerciasis control programme.
**Introduction:** Evidence suggests that there is an association between onchocerciasis (river blindness) and epilepsy. In Cameroon, ivermectin (IVM) distribution programmes to treat (and protect) communities affected by onchocerciasis have been on-going in the Sanaga basin for almost 20 years.

**Aim:** To assess perceptions and uptake of (IVM) and its distribution programme at community level in an area of high prevalence of epilepsy in Cameroon

**Methods:** Ethnographic research was carried out in 10 onchocerciasis-endemic villages in the Mbam valley of the Sanaga basin in Cameroon using participant observation, informal conversations, in-depth interviews and focus group discussions. Sampling was theoretical and data analysis was concurrent to data collection and carried out using NVivo 10.

**Results:** Several barriers to the uptake of IVM were identified. The conduct of IVM distribution varied from village to village and not all eligible individuals were offered treatment or visited door-to-door. In villages with incentives for community distributors, coverage was better according to community participants’ accounts. IVM uptake was compromised mainly by fear of side effects like body swelling that prevented people from working and even death, and conversely by the lack of perceived benefits as people feel healthy. Despite these barriers, according to community members’ accounts, continuous sensitization, especially radio sensitisation, seemed to have had a positive impact, improving attitudes towards IVM uptake. Most people have basic knowledge about IVM and its purpose (filaria treatment).

**Conclusion** IVM uptake can be improved by periodic sensitisation campaigns to erase any misconceptions or rumours that may arise. It should also be complemented by ensuring that migrants and all residents of a village are visited door-to-door and there is observed administration of medicine. Additionally, sustainable incentives like community assistance in farming for community drug distributors would serve as motivation and improve reliability of drug distribution.
Nodding syndrome is preventable

Robert Colebunders¹, Floribert Tepage², Chellafe Ensoy-Musoro³, Michel Mandro⁴, Caroline Bonareri Osoro⁵²⁶, N Gumisiriza⁷, B Mmbando⁸, Anke Rotsaert¹, Anne Laudisoit¹, Patrick Suykerbuyk¹

1. Global Health Institute, Antwerp, Belgium; 2. National Onchocerciasis Control Program (PNLO), Ministry of Health, Democratic Republic of the Congo; 3. Interuniversity Institute for Biostatistics and statistical Bioinformatics, University of Hasselt, Hasselt, Belgium; 4. Ituri Provincial Health Division, Ministry of Health, Democratic Republic of the Congo; 5. Institute of Integrative Biology, School of Biological Sciences, University of Liverpool, United-Kingdom; 6. Nanyuki Teaching and Referral Hospital, Laikipia County, Kenya; 7. Busitema University, Mbale, Uganda; 8. National Institute for Medical Research, Tanga Centre, Tanga, Tanzania

Introduction: A link between nodding syndrome (NS) and onchocerciasis has been suspected based on case control studies performed in northern Uganda and South Sudan.

Aim: To investigate whether ivermectin could protect against epilepsy in an onchocerciasis endemic region.

Methods: A transdisciplinary project (NSETHIO) was created to investigate NS and epilepsy in onchocerciasis endemic areas in 5 African countries: the Democratic Republic of the Congo (DRC), Uganda, Tanzania, South Sudan, and Cameroon. In the DRC, between 2014-2016, house-to-house epilepsy prevalence surveys were carried out in areas with a high level of onchocerciasis endemicity: in 3 localities in Bas-Uele, 24 in Tshopo and 21 in Ituri province. Ivermectin uptake was recorded for every household member. A case of epilepsy was defined as a patient who reported at least 2 unprovoked seizures without fever or any acute illness. This database allowed a village, age and gender matched case-control pair subset to be created that enabled putative risk factors for epilepsy to be tested using univariate logistic regression models.

Results: In the DRC, of the 12,408 people examined 407 (3.3%) were found to have a history of epilepsy. Median age of epilepsy onset was 9 years. A case control analysis of 96 cases and 96 controls demonstrated that before the appearance of epilepsy, compared to the same life period in controls, persons with epilepsy were less likely (OR: 0.52; 95%CI: (0.28, 0.98)) to have taken ivermectin than controls. Surveys in South Sudan, northern Uganda and Tanzania showed that persons with NS and persons with other forms of epilepsy clustered in villages with high ongoing onchocerciasis transmission. In the majority of these individuals the onset of epilepsy was between the ages of 3 to 18 years. In northern Uganda the NS epidemic stopped after the introduction of mass ivermectin distribution and larviciding rivers. Meanwhile in South Sudan, with interruption of ivermectin distribution, new cases of NS continue to appear. Epilepsy survey data from Uganda and Cameroon (where larviciding rivers was never implemented) will be presented at the conference.

Conclusions: Strengthening onchocerciasis elimination programs is the way forward to prevent the development of NS in children.
Introduction: Mental health services are an integral component of primary health care. Yet, provision of mental health services in rural areas of several countries in the global south is scarce. In spite of a long history of establishment of centres of excellence in mental health and national mental health programmes, India lags behind in terms of making mental health care available and accessible in rural areas. Several experiences have shown the important role of non-professional health workers in primary health care in identifying and providing care and support to individuals and families with mental health problems.

Aim: In this presentation, we aim to share the experience of integrating mental health into primary health care in a limited resource setting in a south Indian state.

Methods: We begin with outlining the key events that have shaped mental healthcare policy in India with special focus on strengthening mental health in primary health care. We will critically assess the District Mental Health Programme, the main response of the Indian health system to widespread gaps in mental healthcare in rural areas. We then describe the Gumballi Primary Health Centre’s (PHC) experience in integrating mental healthcare into primary health care and discuss its history and implementation strategy.

Results: Gumballi PHC’s mental healthcare programme is one of India’s few long-term experiences with integrating mental healthcare into PHCs using non-specialist health workers for identification and follow-up of persons with mental health problems at PHC level. Its impact in terms of diagnosis, treatment, follow-up and rehabilitation are described. We also discuss the implications (lessons learned and challenges/limitations) for country policymakers and for global mental health.

Conclusion: It is possible to build the capacity of primary health workers to identify mental health problems and participate as the first point of contact within a system involving primary health centres with trained doctors and visiting psychiatrists. Through a well-coordinated local health system and referral of complicated cases, it is possible to provide basic mental health care services at primary health care in a cost-effective manner.
Introduction: The unmet need in terms of mental health care in developing countries is dramatically high. In Guinea, which has only 5 psychiatrists, there is only one psychiatric department with 33 beds for a population of 12 million. The combined lack of specific mental health services and lack of access to them, compounded by local beliefs and stigma associated to mental illness, lead many people to opt for informal care from traditional healers. Nonetheless, the evaluation of Guinea’s national mental health system carried out by the World Health Organisation in 2015 has shown that despite high usage of traditional healers, mental health patients can indeed benefit from the care provided by front-line professionals working in multi-purpose, non-specialised health centres.

Aim: To illustrate that the integration of a package of mental health care into multi-purpose front-line health services is possible within the limitations of the available resources of low-income countries.

Methods: Eight (8) front-line health centres in Guinea are today included as part of an integrative mental health scheme. The integration scheme consists of 3 components: training, companionship and networking. All front-line health personnel at the health centres were trained and supervised by health professionals with expertise in the domain of mental health. This training was both theoretical and practical in nature, and complemented by companionship.

Results: In the year 2014, 1566 mental health related consultations were conducted by the multi-purpose front-line health workers of the 8 above-mentioned facilities out of a total of 29758 consultations (i.e. 5.3%). 79% of the diagnoses of the 1566 cases were related to heavy psychiatric disorders, 11% to psychoactive substance abuse, 6% to mental and psychomotor delays, and 4% to neuroses/hysteria. On the other hand, 35.4% of the patients who consulted for mental health issues had epilepsy, which in the Guinean context is considered as a mental disorder. All patients received medical and/or psychosocial treatment by the non-specialist health workers.

Conclusion: The Guinea experience demonstrates the relevance as well as the feasibility of integrating mental health care into the front-line care provision where versatile staff work.
Introduction: Uganda has included mental health as one component in its National Minimum Health Care Package, which is to be provided at all levels of care throughout the health system. The shift towards an inclusive and integrated mental health system into Primary Health Care is significant, yet there remain significant shortcomings in the implementation of reformed mental health policies. There is a continued lack of equitable access to quality mental health services, inadequate resource allocation and service delivery, compounded by the lack of human and financial resources.

Aim: To delineate the process of constructing a holistic understanding of the “workings” of a specialist Mental Health Clinic (MHC) within a district level general hospital in rural Uganda.

Methods: As part of a larger comparative mixed-methods study, a total of 66 pairs of consultation non-participatory observations and patient-caregiver exit poll questionnaires were conducted at the MHC at Iganga District Hospital. A total of 32 in-depth interviews were conducted, 27 with patient-caregivers, 4 with health workers of the MHC, and 1 with the hospital director. Lastly, routine data from the hospital’s Health Management Information Systems regarding the MHC was collected. All the various data were analysed separately, then together through processes of triangulation.

Results: Preliminary results (to be completed by October 2017) indicate that the majority of cases are children having epilepsy (a neurological disorder, which in Uganda falls under the purview of mental health) and adults having either mania or schizophrenia. Almost 38% of all monthly cases were new patients. The biggest shortages were in having adequate psychotropic drug supplies and long patient-caregiver waiting times. Nonetheless, the relative burden on MHC health workers was low compared to other departments in the hospital.

Conclusion: Patient-centered and compassionate care training would be of benefit to rotating nursing staff providing care at district level MHCs. The real burden of mental disorders and the gaps in functioning of current mental health programs and available services in Uganda can only be understood from more in-depth and bottom-up processes. Mixed-methods research is an avenue through which contextualized understandings of complex health system integration issues are achievable.
Integrating mental health care into health system: Rwanda experience
Ait Mohand A.1,2, Kayiteshonga Y.2
1Belgian Development Agency, Kigali, Rwanda; 2Rwanda Biomedical Center, Ministry of Health, Kigali, Rwanda

Introduction: Mental health is considered as a priority area of intervention in Rwanda. New challenges emerging in the post-genocide period, mainly linked to psychological trauma issues, highlighted mental health problems and led the Government of Rwanda to develop a national mental health policy aiming at providing comprehensive decentralized and integrated mental health care, close to the community.

Aim: To show “best practices” that facilitated the integration of mental health care into Primary Care namely in term of Governance, Human and financial resources, Service delivery, Data and information systems. Key progress, current challenges and key lessons learnt will be highlighted. On-going strategies and innovative measures ensuring sustainability will be shared.

Methods: Key operational measures included the training of general nurses and general medical practitioners in assessment and management of mental disorders; recruiting psychiatric nurses and clinical psychologists into district hospitals to provide mental health care, supervision and make referrals; ensuring availability of psychotropic medicines in primary care; and integrating mental health indicators into monitoring and evaluation systems.

Results: Limited before 1994 to only one psychiatric hospital located in the capital city, mental health services are now effectively decentralized across the country. Each district hospital has set up a mental health unit, which delivers a comprehensive mental health care package according to the national standards. Recently, general nurses working in health centres (at least two per health centre) and Community Health Workers (at least one per village) were trained to ensure an integrated mental health care component in health centres and at community level.

The following have positively contributed to the decentralisation and integration of mental health into primary care: high political commitment; the establishment of a mental health division within the Ministry of health to lead the integration of mental health; a national mental health policy and implementation plan; integrating mental health care into the community-based health insurance scheme and, the inclusion of mental health as part of the basic health package.

Conclusion: Many steps have been taken to improve mental health care in Rwanda, which could serve as an example on the feasibility of integrating mental health care in LMIC.
**3OS7.1**

**Best practices of implementing clinical bacteriology in low resource settings**

Dissou Affolabi  
*Clinical Microbiology, University Hospital Hubert Koutoukou Maga, Cotonou, Benin*

The declining trend of malaria and the recent prioritization of containment of antimicrobial resistance have created a momentum to implement clinical bacteriology in low resource settings. In this session, “Best Practices” of how to implement clinical bacteriology in a low resource setting will be presented. The target setting is a referral hospital in sub-Saharan Africa with a basically equipped laboratory where conventional culture-based bacteriology is implemented, based on evidence from the existing literature complemented with own experiences.

Apart from the well-known limitations of infrastructure, equipment, consumables and staff, there are particular challenges towards implementation of clinical bacteriology: numerous specimens and pre-analytical criteria, operator skills and subjectivity, interpretation and reporting of intermediate results. In addition, the sub-Saharan healthcare context is not conducive to adoption of quality management systems (small-scale laboratories, attitudes and perception of staff, absence of laboratory information systems). “Best Practices” to facilitate implementation of clinical bacteriology include (1) alignment with national regulations and public health reference laboratories, (2) participation in external quality assurance programs, (3) look for support from the hospital managements, (4) start with simple and attainable projects, (5) learn from your mistakes (i.e. conducting error review with root cause analysis and dedicated training), (6) organize daily bench-side supervision, (7) look for locally adapted solutions (i.e. low-tech, low-cost feasible and affordable), (8) stimulate ownership and a positive attitude and work climate. Such down-to-earth pragmatic approaches may facilitate the implementation of clinical bacteriology in low-resource settings.

**3OS7.2**

**Infection prevention and control in high-burden low-resource settings: Where to start, and what to do?**

Joost Hopman  
*Infection Control Unit, Radboudumc, Nijmegen the Netherlands; Doctors without Borders*

The role of Infection Prevention and Control (IPC) cannot be overestimated in an era of widespread transmission of multi-drug resistant pathogens worldwide, both in the community and health care setting. There is increasing evidence that hospitals in low-resources settings function as hotbeds of disease transmission and are frequently home to (unrecognized) hospital outbreaks. The burden of health care-associated infections is probably several times higher in low and middle income countries as compared to high-income settings with established infection prevention and control programs in their health care settings. These nosocomial infections often affect the most vulnerable patients (e.g. neonates, critically ill) and are associated with a high burden of morbidity and mortality.

With IPC being one of the pillars in its Global Action Plan to contain antibiotic resistance, the World Health Organization has launched several initiatives, established guidelines and made implementation packages available. Although there is increasing evidence on the effectiveness and feasibility of several interventions, numerous challenges and questions remain on how to bring the theory into practice, i.e. how to translate best current practice for high-burden low-resources settings.

In this lecture an overview will be given on the advances made in recent years, the actual challenges and on what future holds in terms of global IPC.
Optimizing worldwide use of antibiotics: What works?
Heiman Wertheim
Department of Medical Microbiology & Radboud Center for Infectious Diseases, Radboudumc, Nijmegen, Netherlands

Antibiotic resistance (ABR) is a quickly emerging problem worldwide, including in low-and middle-income countries (LMICs). Optimization of antibiotic use in humans and animals, i.e. antibiotic stewardship (ABS), is one of the corner stones of the World Health Organization’s global action plan for ABR. Many LMICs are in the process of developing stewardship policies and programs. Evidence on effective and feasible stewardship interventions in LMICs is limited. Based on recently published evidence, guidelines and personal experiences, this lecture will highlight the challenges for ABS initiatives in LMICs, give an outline of the (inter)national recommendations and demonstrate examples of effective, contextualized stewardship interventions across the globe.

Many strategic points might need to be progressively addressed in LMIC, such as (1) dedicated education in ABR both for HCWs and the general public, (2) ensuring availability of diagnostic tests adapted to the environmental circumstances, (3) creating or strengthening (Inter)national agencies towards better regulations and audit on production, distribution and dispensing of drugs, (4) exploring a broader synergism between policy makers, academia, professional bodies and the civil society, (5) strengthening health care facilities and (6) designing and studying easy and scalable ABS interventions.

Veterinary antibiotic stewardship: The One Health perspective
Juan Carrique Mas
University of Oxford clinical Research Unit Ho Chi Minh, Vietnam

The scale and impact of veterinary and agricultural antibiotic use in low-resources settings is probably highly underestimated and presumptively higher than human use. Interventions to decrease and rationalize the use in this sector are very scarce, especially in low resources settings where access to veterinary medical support is scarce and expensive, and where antibiotics are easily accessible for poor farmers.

Taking the ViParc Project (a Veterinary Intervention to Reduce Antimicrobial Usage in Animal Production, i.e. a chicken farm-based trial) and earlier epidemiological studies in Vietnam as an example, the speaker will bring an introduction on the particular challenges and possible ways forward to bring also in the veterinary sector optimization of antibiotic use. In this trial, the proposed intervention will consist of providing veterinary support to farmers assigned to two intervention groups during the second phase of the study to help them improve their productivity and reduce disease, therefore reducing also their reliance on antimicrobials. Farmers in the intervention groups will be supported with free training courses on poultry diseases and poultry farm management. They will also receive veterinary support free of charge. The study aims to answer following questions (amongst others):

- How do farmers use antimicrobial medicines for their chickens (including in feed) and what is their knowledge about these medicines?
- How do chicken enteric bacteria become antimicrobial resistant after having used antimicrobials?
- Does meat from chicken farms contain antimicrobial residues?
- Does veterinary advice help farmers reduce disease in chicken flocks?
- What is the contribution of hatcheries and inadequate cleaning and disinfection on antimicrobial resistance?
**3OS8.1**  
*Can we decrease the antibiotic misuse for febrile illnesses in the tropical primary care setting?*  
Kristina Keitel  
Swiss Tropical and Public Health Institute, Basel, Switzerland

The deployment of malaria rapid diagnostic tests has allowed improving the management of malaria, including a more rational use of antimalarials. It has also resulted in a better appraisal of the actual, declining, malaria burden, and increased the focus on the optimal management of the other causes of fever, which remains unresolved. With declining antimalarial consumption, an alarming shift has been observed towards the indiscriminate use of antibiotics as empirical therapy of fever in the primary care setting, where most etiologies of fever are viral. In this talk, different experiences aimed at improving the clinical guidance of frequent febrile syndromes, particularly respiratory tract infection and undifferentiated infections, will be presented. Could the strict adherence to the Integrated Management of Childhood/Adult Illness guidelines be sufficient to decrease the unnecessary use of antibiotics? Should the introduction of a relevant set of disease-specific point-of-care tests complement local clinical guidelines? What is the role of inflammatory biomarkers allowing a “group” diagnosis of bacterial or viral infections? Or is a mix of these different tools the way forward? This presentation will address most of these unresolved issues and highlight current research efforts to improve the clinical guidance for first-line caregivers in managing acute febrile illnesses.

**3OS8.2**  
*Surveillance of febrile illness in the tropics: Beyond the point-of-care to sentinel laboratories*  
Cédric Yansouni  
JD MacLean Centre for Tropical Diseases, McGill University Health Centre, Montréal, Canada

Diagnostic and treatment decisions for fever syndromes require accurate knowledge of their geographically-defined etiological spectrum. Although several comprehensive studies have clarified disease burden in some areas, epidemiological information remains limited in much of the tropical world. New diagnostic tests for low-resource settings (LRS) are frequently discussed in terms of feasibility of implementation near the point-of-care. However, for a number of clinical decisions in febrile patients, such tests are either unfeasible at the moment, or are unnecessary when local epidemiologic data are available to guide rational empiric therapy. Surveillance in higher level laboratories allows the use of more complex testing to provide ongoing locally-adapted data on geographically-restricted infectious agents, and facilitates early recognition of outbreaks of emerging or re-emerging pathogens. Crucially, strengthened sentinel laboratories also allow for interdigitation of fever surveillance with that of antimicrobial resistance, whose diagnosis remains beyond the reach of most LRS hospital laboratories. This intersection is especially pertinent to specific febrile syndromes whose burden is high but for which current diagnostic approaches are limited, such as enteric infections and hospital-acquired infections. This presentation aims at triggering a more general reflection on the integration of promising diagnostic microbiology technologies for the surveillance of febrile illness within a functioning network of regional laboratories.
Much attention is paid nowadays to the management of febrile illness other than malaria, in order to improve the early diagnosis of bacterial infections for which empirical antibiotic treatment would be most beneficial. So far, most research efforts have focused on patients with acute fever presenting at various levels of the health care system. However, in the tropical real life, a significant proportion of febrile patients either postpone this first contact, preferring to wait for spontaneous cure or to take some self-medication, or do not respond to first-line antimicrobials. Caregivers in the field are therefore often confronted with patients presenting with one or more week(s) of fever. Usually, after such a time lapse, most self-limiting viral infections have improved, while susceptible and/or less severe bacterial infections have also evolved favorably either spontaneously or with an even suboptimal antibiotic treatment. The management of prolonged fever (defined here as > 1 week duration) is particularly challenging, once malaria has been excluded (rather straightforward nowadays). There is indeed little epidemiological knowledge and virtually no recommendation to guide the care of such patients. In this talk, the few clinical studies addressing specifically this syndrome will be reviewed. Also the recent research experience of the NIDIAG consortium (Better Diagnosis for Neglected Infections) will be presented. The consortium has indeed recently completed large clinical studies in 4 tropical countries (n=2000 participants in total), to investigate in detail the etiologies of prolonged fever and to elaborate evidence-based guidelines addressing this clinical entity. It is expected that the audience will realize that prolonged fever represents a specific challenge in low resource settings that should be better addressed as such in future clinical guidelines.
3OS9.1
Access to HCV medicines and diagnostics worldwide – Successes & remaining challenges
Jessica Burry
HIV/HCV Access Campaign Pharmacist at Médecins Sans Frontières

A HCV cure has been available and approved since 2013, when sofosbuvir was first approved by the US-FDA. However, 4 years later, for many reasons, we still have few quality-assured generic options available in the market, few patients cured and patients still struggling to access DAAs in countries around the world. High-priced complex diagnostic algorithms continue to be a barrier to access as well. Lack of HCV programs and guidelines in most countries & lack of donor funding mechanisms contribute to the overall lag in providing access to HCV diagnosis and treatments. This session aims to highlight the challenges still to be overcome for the millions of patients yet to be treated & touch on some of the successes so far.

3OS9.2
The innovative R&D model of the Drug for Neglected Disease Initiative (DNDi) to increase access to HCV care in low- and middle income countries
Isabelle Andrieux-Meyer
HIV/HCV Team Leader, DNDi

Competition between companies has hindered the development of optimal pan-genotypic combinations essential for public health use. The newest drugs, Direct Acting Antivirals (DAAs) are very expensive and nearly half of the world’s hepatitis C patients live in low- and middle income countries (LMICs) excluded from current licensing agreements. DNDi develops HCV DAAs to be used in combination for public health use in low, middle, and eventually high income settings, at affordable price. Affordable price meaning prices which families or health insurance systems can afford to pay. DNDi develops an innovative R & D model to reach this purpose. This model and its expected outcomes will be described.

3OS9.3
Unlocking the Hepatitis C Market for Diagnostics
Francesco Marinucci
Head of HIV/HCV Unit, FIND

Hepatitis C management is almost non-existent in LMICs, and market shortcomings cut across all categories. Diagnostics remain a major bottleneck to appropriate HCV care: fewer than 1% of patients in LMICs are currently aware of their HCV infection, and the limited testing that does happen is mostly in the private sector. Diagnostic tests for HCV are currently available only in the form of high-priced screening tests and confirmatory testing at central laboratories and diagnostic algorithms are overcomplicated. The different strategies foreseen in the FIND Project to contribute to an efficient public health response will be discussed: a) catalysing development of appropriate point-of-care (POC) tests on polyvalent platforms; b) ensuring improved affordability of diagnostics; c) establishing innovative models for screening and treatment in co-infected patients; and d) driving policy change and government commitment through evidence on cost-effectiveness of HCV diagnosis and treatment.

3OS9.4
Hepatitis C testing & treatment roll-out in Rwanda – Policy development & Program implementation
Sabin Nsanzimana,
Division Manager of HIV/AIDS, STIs and Other Blood Borne Diseases Division, Ministry of Health, Rwanda

Rwanda started working on the roll-out of hepatitis C diagnosis and treatment in 2015 and is one of the first low-income countries that took up the challenge to develop a Hepatitis C treatment program through the public health system. In this presentation, the challenges (lack of awareness in the community and among providers, limited diagnostic and treatment facilities, need for care provider training, …) and the achieved progress (national hepatitis program, updated treatment guidelines, registration of DAA’s, coverage by private and public health insurance, numbers diagnosed and treated, partnerships,…) will be shared. A particular attention will be given in the way Rwanda’s strongly developed public diagnostic & treatment system for HIV care enabled a quicker launch of activities and reach.
From HCV screening to treatment with generic Direct Acting Antivirals - Results from a pilot HCV/HIV coinfection project in Cambodia
Anja De Weggheleire
Unit HIV & Infectious diseases, Department of Clinical Sciences, Institute of Tropical Medicine (ITM), Antwerp, Belgium

In 2014, Sihanouk Hospital Center of Hope and ITM started a hepatitis C project among HIV patients in Phnom Penh (Cambodia) to document the burden of hepatitis C/HIV coinfection, to pilot DAA treatment and to distill from this pilot experience innovative strategies to facilitate roll-out of HCV screening, diagnosis and treatment in resource-constrained settings. The presentation will focus on 1) main results of the epidemiological study; 2) derived clinical prediction rule to enable targeting of HCV testing to those at highest risk of chronic hepatitis C and in need of treatment; and 2) first ever results of an HCV/HIV cohort treated with generic DAA’s in a low-income setting.
Antibiotic bacterial resistance in the community and hospital setting: A French and European perspective on recent trends in humans

J. Robert
National Observatory for Epidemiology of bacterial resistance to antibiotics (ONERBA) & Centre for Immunology and Infectious Diseases-Paris (CIMIT-Paris), Paris, France

Antibiotic resistance is a public health threat and the WHO recently called for international mobilization. Among the strategic actions, epidemiological surveillance is key because it brings knowledge, allows evaluation of actions and awareness of the population.

In Europe, numerous countries are conducting surveillance of antibiotic resistance. In addition, coordinated European surveillance systems have been set up in order to improve benchmarking. Among these, the EARS-Net system, the Gonococcal Antimicrobial Surveillance (Euro-GASP), and the anti-tuberculosis drug resistance surveillance programs, currently coordinated by the ECDC, have the ability to analyze trends over more than 10 years. In France, the ONERBA federates 15 networks focused on the surveillance of bacterial resistance to antibiotics, including in the animal settings.

Two species will be used as examples. First, the rate of non-susceptibility to penicillin of *Streptococcus pneumoniae*, a typical community species, is variable across Europe (<1% to >30% in 2015) for isolates from invasive infections. An increase was observed in only 3 countries over the last four years. The French national reference center reported a decrease from 51% to 21% over the last 15 years.

When considering the non-susceptibility to extended spectrum cephalosporins (ESC) of *Escherichia coli* from bacteremia, resistance rates varied from <2% to 38% in 2015 across Europe. The rate increased significantly in 13/30 countries. In France, data from the community showed an increase in ESBL-producing isolates from urines from 2.0% in 2010 to 3.3% in 2013. Rates observed in nursing homes reached 12.1%. In the hospital settings, the susceptibility to ESC decreased from 98.2% to 89.7% among isolates from bacteremia. This downward trend was observed among isolates coming from nosocomial- and community-onset bacteremia. Resistance of *E.coli* to carbapenems remained a rare event.

In conclusion, the time trend in bacterial resistance to antibiotics is heterogeneous. While there are some reasons for hope when considering *S. pneumoniae* resistance to penicillin in France and a few other countries, there are more reasons to fear a dramatic increase in the coming years in antibiotic resistance among gram-negative rods, and especially *E.coli* which is a commensal of our normal digestive flora.
Thirty year experience on antimicrobial resistance in the Bolivian Chaco: Towards a one-health one-world approach

Bartoloni A, Herlan Gamboa Barahona, Gian Maria Rossolini

1 Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy; 2 Distrito de Salud Cordillera, Departamento Santa Cruz, Camiri, Plurinational State of Bolivia 3 Facultad Politécnica del Chaco, Universidad Gabriel René Moreno, Camiri, Plurinational State of Bolivia

Introduction: The global increase of Antimicrobial Resistance (AMR) is a major threat to human and animal health. In low-resource countries where legislation, regulatory surveillance and monitoring systems on the use of antimicrobials, and the prevention and control of AMR are weak or inadequate, the problem is of particular concern.

Aim: To report the results of cooperation and research activities addressing the phenomenon of AMR in the Bolivian Chaco region, carried out since the late 1980s.

Results: Studies conducted on commensal Escherichia coli, showed a remarkable resistance rates to the old antibiotics (i.e., ampicillin, trimethoprim–sulphamethoxazole, tetracycline) since early 1990s, and the emergence of resistance to newer drugs (fluoroquinolones and expanded-spectrum cephalosporins) in the 2000s. In 2011 a dramatic increase of resistance to fluoroquinolones and expanded-spectrum cephalosporins was documented. Of note, CTX-M-type extended-spectrum beta-lactamase (ESBL) determinants were first detected in the early 2000s and thereafter underwent rapid dissemination. A study conducted on bacterial pathogens responsible for urinary tract infections collected in the period 2010-2014, showed very high resistance rates. The lowest susceptibility was observed for trimethoprim–sulphamethoxazole, tetracycline, nalidixic acid, amoxicillin–clavulanic acid, ciprofloxacin, and gentamicin. Of E. coli and K. pneumoniae, 11.6% were ESBL producers. Resistance to nitrofurantoin, amikacin, and fosfomycin remained low, and susceptibility to carbapenems was fully preserved. Remarkable rates of acquired resistance was also documented in commensal E. coli from home-raised chickens. Recently, a study aimed at investigating the presence of antibiotic-resistant Enterobacteriaceae in samples of ready-to-eat food evidenced the presence of mcr-1-positive Citrobacter braakii from a boiled potato. mcr-1 is a mobile colistin resistance gene recently reported in Enterobacteriaceae from humans and food-producing animals in different countries. Based on these data, contextualized, information, education and communication campaign aimed at raising awareness on AMR and related threats has been implemented. In order to improve compliance to hand hygiene of health care workers, a multimodal strategy, in accordance to WHO guidelines, has been implemented at Camiri Municipal Hospital. Within the perspective of a “One Health” approach, activities involving veterinary, food and agricultural sectors, have been planned.

Discussion: A multisectoral and multidimensional “One Health” approach is needed to contain AMR.
Introduction: “Preventive chemotherapy” is the mainstay of control for human helminthiasis. Anthelminthic drug resistance (AR) is a serious problem in veterinary medicine and most of the gastrointestinal nematodes of small ruminants are resistant to the front line anthelminthics. AR is not yet confirmed in humans but the situation in veterinary medicine is a warning to prevent AR to occur in preventive chemotherapy. The World Health Organization has set up a working group to monitor anthelminthic drug efficacy and prevent the threat of AR.

Aim: To describe the epidemiological tools available to detect and prevent AR and discuss future challenges in the scenario of public health interventions to control/eliminate helminth infections.

Methods and Results: Different strategies and tools to combat AR have been identified: i) safeguard the present efficacy of single dose anthelminthics by promoting their rationale use (define appropriate frequency and target groups for treatments, avoid prolonged use of single class of drugs, promote the concept of refugia; ii) use of drugs with different mode of actions in combination/co-administration; iii) monitor periodically drug efficacy in settings of high drug pressure; iv) develop sensitive diagnostic tools to detect AR. WHO developed a manual for standard diagnostic methods to monitor anthelminthic drug efficacy. Innovative clinical trials are ongoing to assess the efficacy and safety of several drugs used in combinations. More sensitive diagnostic tools (e.g. molecular) are under evaluation in multicentric studies.

Conclusions: Progress has been made but challenges are still to be met. The molecular basis of AR in humans needs to be further explored in order to develop sensitive molecular tools. Currently very few new anthelminthics are in the pipeline, therefore it is important that previously registered anthelminthics should be made available again. Coverage of preventive chemotherapy should be kept high, yet avoiding high drug pressure and availing sufficient worm population in refugia. One Health approach should be promoted to share lessons and R&D between veterinary and human health.
Classic antimicrobial susceptibility testing (AST) mostly employs culture-based technologies but a variety of alternative methodologies has been presented in recent international literature, partly due to the incentive provided by the emergence of extensive antimicrobial resistance (AMR). Essentially, any method that can distinguish dead or dying cells from growth-arrested or fully viable organisms is potentially suited as an AST system. Examples of such methods are diverse and include physical and/or (bio-)chemical methods. It is important to define whether these methods are of sufficient analytical power. Defining multiple susceptibility and resistance traits of individual bacterial strains towards different antimicrobials at high speed and low costs is important. This will define multi-drug resistance (MDR) and identify the AST system that will continue to keep pace with MDR development. There is a continued need for improvement in the AST field and the newer technologies will be reviewed during the presentation.

The most extensive AST innovation has been in the domain of next generation genome sequencing (NGS). Clearly, the use of NGS for AST is not universally accepted as the global tool of the future but genomic AST is quite flexible and can be used in different fields of research. The technology allows for the definition of new resistance mechanisms, but can also be used to build predictive models translating a genome sequence into a genomic antibiogram. Finally, resistome wide association studies (RWAS) can lead to detection of (new) molecular markers associated with specific resistance mechanisms. Obviously, all of this work requires the construction of adequate reference databases and the use of reliable sequencing data.

The presentation will focus on the correlates between classical phenotypic AST and genomic AST. Test validation and the use of open databases will be addressed as will be the need for coordination of data interpretation in light of regulatory accreditation of the tests and their ultimate application in the setting of the routine clinical microbiology laboratory in both established and emerging economies.
Introduction: Point Prevalence Surveys (PPS) are established surveillance methods for monitoring antimicrobial prescribing in hospitals.

Aim: We established an ad hoc global hospital network to monitor antimicrobial prescribing and resistance rates worldwide by means of a PPS tool.

Methods: Using a standardized and validated PPS method, data were collected in January-September 2015 from 335 hospitals (H) in 53 countries (C), including Europe (24C;214H); Africa (5C;12H), Asia (16C;57H), South-America (3C;19H), North-America (3C;24H), and Oceania (2C;9H). Detailed data was collected for all inpatients receiving an antimicrobial on the day of the survey. A web-based application was used for data-entry, validation and reporting designed by the University of Antwerp (www.global-pps.com). A second Global-PPS is currently conducted in 2017. I will report on the global findings of the first Global-PPS. for patients admitted to adult wards.

Results: Out of 100,591 admissions, and 44,305 prescriptions, 33,718 antibacterials were prescribed for adults and 6,080 antibacterials were prescribed for neonates and children. Among adults, top 3 antibiotics used were amoxicillin/clavulanic acid with highest rates in West- (33.3%) and North-Europe (28.6%), followed by third-generation cephalosporins with highest rates in East-Europe (49.4%) and West-Central Asia (25.0%); and fluoroquinolones (highest in North-America: 19.1%). Carbapenems were frequently prescribed in South-America and West-Central Asia (9.0%). We identified several quality indicators for improved antibiotic prescribing: documentation of the reason for prescription in the patient chart, the formal procedure for a physician or other staff member to review the appropriateness of an antimicrobial at or after 48 hours from the initial order, the existence and adherence to antibiotic treatment guidelines, the proportion of parenteral use and surgical prophylaxis.

Conclusion: This Global-PPS tool provided for the first time quantifiable outcome measures to assess and compare quantity and quality of antibiotic prescribing as well as resistance levels in hospitalized patients worldwide. These data serve to identify targets for quality improvement of antibiotic prescribing, the development of local prescribing guidelines, education and practice changes, and for measuring the impact of interventions through repeated PPS. Importantly, this action prioritized at providing quality indicators for measurement and improvement of antibiotic use in countries with poor resources, limited support and very little expertise.
Refractory giardiasis – An appraisal of second-line treatment options
Andreas Neumayr
Swiss Tropical Institute of Public Health, Basel, Switzerland

Currently the best second-line treatment regimen for refractory giardiasis still needs to be defined. Thus, after failure of 1st-line treatment with a 5-Nitroimidazole, physicians are frequently confronted with the question which drug or drug combination to choose in 2nd-line treatment. This presentation summarizes the available 2nd-line treatment options and the evidence of their efficacy. It will also provide some preliminary results of an ongoing TropNet multicenter clinical study comparing different therapies for refractory giardiasis.

Early diagnosis and treatment of acute schistosomiasis (Katayama syndrome) in travelers
Jan Clerinx
Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium

Early diagnosis of acute schistosomiasis is impaired by the rather long window period of the current diagnostic methods (detection of eggs in urine or feces, and antibody-based serological assay), so that treatment decisions have to be based on clinical grounds only. Recently some molecular tools have been developed and showed promise in accelerating the early diagnosis of this condition which can cause serious complications. In addition, the optimal pattern, timing and duration of treatment, based on steroids, praziquantel or both, remain controversial. Based on the recent experience of a large cluster of cases of acute schistosomiasis observed in the ITM, Antwerp, a careful description of the current treatment options will be proposed.

Management of cystic echinococcosis in the non-endemic setting: Is harmonization of practices feasible?
Peter Chiodini
London School of Tropical Medicine and Hygiene, UK

Cystic echinococcosis is a condition associated with major morbidity, and for which the efficacy of medical treatment remains disappointing. A recent survey demonstrated that treatment practices among infectious disease specialists where highly heterogeneous and often not in accordance with WHO recommendations. This lecture aims at highlighting the remaining areas of uncertainty in the clinical management and at elaborating on some new recommendations in preparation.

PCR-controlled management of cutaneous and mucocutaneous Leishmaniasis
Johannes Blum
Swiss Tropical and Public Health Institute, Basel, Switzerland

Treatment of uncomplicated cutaneous leishmaniasis is straight forward in most cases, but complicated forms of cutaneous and mucosal leishmaniasis may be a challenge. The choice of treatment is guided by species, clinical presentation and immune status of the patient. Treatment specific recommendations and have been revised almost entirely since PCR examinations are available. New epidemiological trends in European travelers and updated knowledge on management of old and new world leishmaniasis will be presented.
3OS12.1
The increasing role of lung ultrasound in HIV
Giordani MT
San Bortolo Hospital, Infectious and Tropical Diseases Unit, Vicenza, Italy

Introduction: Point of Care (POC) Ultrasound (US) of the chest is a very promising method for HIV patients, particularly in low resource setting. In fact, the technic is easy to perform and doesn’t need expensive scanners, isn’t risky for the patient and the operator, and can be performed at any age in any patient’s clinical conditions. Furthermore, in low resource and remote settings US with portable scannnels is often the only diagnostic method available. We conducted a pilot study on 12 HIV patients with diagnosed *Pneumocystis jirovecii* pneumonia (PJP) in our Hospital suggesting that in patients with HIV and PJP, POC-US could be helpful to establish when non-invasive mechanical ventilation is required. The results of the study need to be confirmed by prospective studies in limited resource settings.

POC chest ultrasound in patients with different lung and pleural diseases has reliable applications, particularly in bacterial pneumonia, pneumothorax, pleural and pericardial effusion. In AIDS patients, POC chest US could be the useful in narrowing the diagnostic differential between the most common and lethal lung conditions (bacterial pneumonia, PJP and CMV interstitial pneumonia, lung tuberculosis). In this presentation we will review the state of art of this technique and we will discuss the diagnostic features in different AIDS-related lung conditions.

3OS12.2
Point-of-care ultrasound for extra-pulmonary tuberculosis in India: A prospective cohort study in HIV-infected and uninfected TB suspects
Weber S. 1, Saravu K. 2,3, Heller T. 1, Gehring S. 1, Bélard S. 5,6
1Dept. of Pediatrics, University Clinics Mainz; Germany; 2Dept. of Medicine, Kasturba Medical College, Manipal University, Manipal, India; 3Manipal McGill Center for Infectious Diseases, India; 4Lighthouse Clinics, Lilongwe, Malawi; 5Dept. of Pediatric Pneumology and Immunology, Charité University Medicine, Berlin, Germany; 6Berlin Institute of Health, Berlin, Germany

Introduction: Tuberculosis (TB) continues to be a global health concern. Diagnosing extra-pulmonary TB (EPTB) is particularly challenging. Point-of-care ultrasound (POCUS) is increasingly applied in sub-Saharan Africa, facilitating the diagnosis of EPTB. The performance of POCUS for EPTB in India, a country with a moderate relative TB and HIV burden, was unknown.

Aim: Validation of the protocol “Focused Assessment with Sonography for HIV-associated Tuberculosis (FASH)” for diagnosing EPTB in HIV-infected and HIV-uninfected TB suspected patients in India.

Methods: Patients ≥ 16 years presenting at Kasturba Medical College, Manipal, India, with suspected TB were prospectively enrolled. All patients underwent diagnostic TB work-up and were assessed by clinician-performed POCUS (FASH protocol) for pericardial, pleural and ascitic effusion, abdominal lymphadenopathy and hepatic and splenic micro-abscesses. Patients were categorized as microbiologically confirmed TB, clinical TB (histo-pathological, radiological or clinical evidence) and unlikely TB (TB not diagnosed and not treated for). Ultrasound findings were correlated with TB category, HIV-status and discharge diagnoses other than TB.

Results: Between February and July 2016, a total of 475 patients were enrolled and 425 were included in the analysis. Median (interquartile range (IQR)) age was 43 (32;55) years; 328 (77%) patients were male, and 81 (20%) were HIV-infected. A positive FASH-examination was more common in HIV/TB co-infected patients than in HIV-infected patients without TB (24/40 (60%) versus 9/41 (22%), p<0.001); in HIV-infected patients, abdominal lymphadenopathy and splenic micro-abscesses were strongly associated with TB diagnosis (p=0.002 and p=0.001). In HIV-uninfected patients, a positive FASH-examination did not correlate with TB diagnosis. A third of HIV-uninfected patients with unlikely TB but with FASH-findings was diagnosed with malignancy and another third with an infectious diseases other than TB.

Conclusion: Sonographic findings were common in HIV-infected and HIV-uninfected TB suspected patients. In this study setting FASH was a useful bedside test for detection of EPTB in HIV-infected patients; in HIV-uninfected patients interpretation of FASH findings must be made carefully to support diagnosis of EPTB, malignancy or other infectious diseases.
Proposed improvement of the WHO protocol for focused assessment of ultrasound abnormalities due to schistosomiasis
Richter J.
Institute of Tropical Medicine and International Health, Charité Universitätsmedizin, Berlin, Germany

The WHO has published standardized ultrasound protocols for the assessment of schistosomiasis in 1993 and 2000. All relevant publications in this field have been reviewed and analyzed for the practicability and reliability of these protocols. To enable a more reliable and more easily applicable focused assessment of schistosomiasis sonographic abnormalities several modifications of or additions to the protocols are proposed and will be discussed in this presentation.

For Schistosoma haematobium infection: provide height-adjusted minimal urinary bladder fillings; state whether the bladder contains blood clots, sediment, sludge or calculi; simplify and improve the urinary bladder findings scoring; provide a more fine-grained urinary tract obstruction scoring. Regrading optional investigations, “fibrosis of the renal pelvis” should be omitted since this has never been observed, while presence of ureteric lesions, calcifications, prostatic echogenic lesions, hydrocele or other signs of genital involvement should be added. In pregnant women, fetal growth parameters should be specifically compared with gestation time and the placenta should be scanned for lesions.

For S. mansoni infection: omit all previously envisaged measurements except for the portal stem; obtain a more fine-grained grading also covering “in-between”-findings and reduce intra- and inter-observer variation by introducing a second image pattern (IP) choice; risk scoring for gastrointestinal bleeding should be simplified by a score built by the IP-score for portal fibrosis and the portal vein quotient; gallbladder changes including external echogenic wall protuberances, sludge, calculi as well as the result of a ultrasonographic Murphy manoeuvre should be part of the standard protocol. Finally, all reports and publications on hepatic abnormalities due to schistosomiasis should state the rate of co-infections with HBV, HCV, or HDV.

For S. japonicum and S. mekongi infections: ultrasound pictures should be compared to standard image patterns covering interseptal (network patterns) and portal fibrosis; combined network- and portal fibrosis patterns are proposed; network patterns should be sub-divided into two classes according to predominant mesh size.
Ultrasound classification of cystic echinococcosis: Where are we 15 years after?

Tamarozzi F.
Department of Clinical Surgical Diagnostic and Pediatric Sciences, University of Pavia; WHO Collaborating Centre for Clinical Management of Cystic Echinococcosis, Pavia, Italy

Ultrasound (US) is the gold standard technique for the diagnosis, staging and follow-up of human abdominal cystic echinococcosis (CE). In 2003, the WHO Informal Working Group on Echinococcosis (IWGE) issued the first standardized classification of CE cysts, subsequently revised and updated in the 2010 Expert Consensus document. The current WHO-IWGE classification includes 6 CE stages, allowing a univocal cyst staging, and reflecting, in most cases, the biological viability of the cysts and their natural evolution. Importantly, this classification guides the allocation to the different clinical management options of uncomplicated hepatic CE cysts. Unfortunately, its use, as assessed through an analysis of the published literature and published and unpublished surveys among physicians, is still appallingly low. A recent systematic review of published literature on the use of the WHO-IWGE classification for hepatic cystic echinococcosis found that over 70% of eligible published papers did not indicate any cyst classification. Also, the majority of the eligible papers did not report compliance with other key WHO-IWGE recommendations on the use of albendazole and follow-up. When an online survey questionnaire was produced detailing 5 clinical cases and submitted to CE treating clinicians, it was found a great variation in practices worldwide, with practices in common use that are known to be ineffectual and a number of unsafe practices. The reasons for non-compliance with WHO recommendations are unclear. A recent study showed that the WHO-IWGE classification can be used reliably by "experts" to stage CE cysts on the basis of the IWGE-defined US pathognomonic signs, and a Focused Assessment with Sonography for Echinococcosis (FASE) training course for general practitioners is successfully run in Argentina for over 10 years, indicating that the IWGE classification can be taught and used successfully. However, almost 15 years after its first introduction, the WHO-IWGE classification remains to be rigorously assessed in terms of easiness and impact on daily practice. This presentation will review the features of the WHO-IWGE CE cysts classification and the most important differential diagnoses, and will address the main "hot issues" requiring attention in the near future.

The challenges of teaching ultrasound in low-resourced settings

Kaminstein D.
Department of Emergency Medicine, Medical College of Georgia at Augusta Univeristy, Augusta, Georgia, USA

Applications of point-of-care ultrasound (US) in resource-limited settings have expanded significantly over the past ten years. Clinicians have been using US at the bedside to answer focused questions for decades. Recent protocols for identification of thoracic pathology, and applications in HIV-infected patients have made US a dynamic tool in regions where CT and MRI are not readily available. In addition, US systems have become increasingly portable with many modern-day systems able to function even on a phone or tablet. This has resulted in US reaching clinicians in parts of the world that have had no prior access to advanced imaging. There is emerging evidence that portable US can have a significant impact on patient care. The benefits of access to this technology have also brought questions about how best to train healthcare professionals on the use and applications of US. Questions surrounding competency, quality assurance, teaching methods and maintenance of skills are becoming increasingly important as US training increases. Several studies have demonstrated that short focused US courses are very effective in teaching specific ultrasound skills. However very little has been published with long-term follow-up examining retention of skills. This symposium will address some of the challenges of teaching US in low-resourced settings including, breadth of material, mentorship, quality assurance, and recent advances in US technology.

References:

4OS1.1
Developing treatments for Human African Trypanosomiasis (HAT): DNDI’S R&D strategy
Strub-Wourgaft, N.
¹Drugs for Neglected Diseases initiative, Geneva, Switzerland

Aim: To develop field-adapted affordable treatments for HAT and, ultimately, two new oral compounds for g-HAT that are efficacious and safe in monotherapy for both disease stages in adults and children, and ideally also efficacious for r-HAT.

Method: DNDI’s short-term strategy was to make better use of the existing drugs nifurtimox and eflornithine by combining them to produce NECT, a treatment with a reduced number of intravenous infusions and shorter duration than eflornithine alone. As a medium-term strategy, DNDI initiated a compound mining effort in 2005 to identify existing chemical compounds with potential against kinetoplastid disease, resulting in the discovery of fexinidazole, the first new chemical entity from the DNDI preclinical program to enter clinical development in September 2009. In order to build a strong pipeline for long term drug discovery, DNDI established a HAT Lead Optimization Consortium resulting in the identification of the oxaborole SCYX-7158, from a new class of orally available compounds.

Results: NECT has been universally accepted as first line second stage g-HAT treatment, and is included in the WHO lists of essential medicines for adults and children. Fexinidazole has been developed as the first alternative to NECT that could be used as a stage-independent oral treatment based on a pivotal comparative study that completed in 2016. Additional trials on stage 1 and early stage 2 adults, and children with g-HAT have also shown positive results. A regulatory dossier is being finalized with DNDI’s partner, Sanofi, for submission to the European Medicines Agency under Article 58. This pathway aims at facilitating WHO prequalification and regulatory approvals and implementation in endemic countries. SCYX-7158 has successfully progressed through Phase I clinical development and Phase II/III trials started in DRC in 2016.

Conclusion: In the short term, DNDI’s strategy has successfully delivered an improved treatment option, NECT. Fexinidazole is the first oral treatment for HAT with the potential to transform the treatment of HAT, particularly in remote areas. In the longer term, SCYX-7158 is being developed as a as a second-line single-dose treatment to sustain the elimination of HAT.

4OS1.2
Efficacy and safety of fexinidazole compared to Nifurtimox-Eflornithine Combination Therapy (NECT) in patients with late-stage Human African Trypanosomiasis (HAT) due to T. B. gambiense: A pivotal, non-inferiority, randomised, open-label, multicentre study
Tarral, A.
¹Drugs for Neglected Diseases initiative, Geneva, Switzerland

Aim: The primary endpoint was to demonstrate that the success rate at 18 months after the end of treatment was within an acceptable non-inferiority level compared to NECT. Success was defined as patient alive, with no evidence of trypanosomes in any body fluid, and CSF WBC ≤20 cells/µL.

Methods: The study was an open-label, unbalanced randomized 2:1 ratio, once a day oral administration of fexinidazole with food for 10 days (1800mg D1-D4 + 1200mg D5-D10) versus NECT, twice daily IV α-difluoromethylornithine infusion for 7 days plus 3 times daily oral nifurtimox for 10 days. The sponsor remained blinded to data until the end of the study. Patients were hospitalized for 18 days and followed until 18 months for the primary endpoint and 24 months for complementary data. Adults aged at least 15 years with late stage 2 g-HAT and confirmed evidence of parasite were included. Ethical review included advice from independent experts and ethics committee representatives from Africa and Europe, facilitated by WHO and approval by independent ethics committees in DRC and CAR. Visual aids were used to obtain informed consent from illiterate patients. Study monitoring was performed according to international standard operating procedures.

Results: The primary analysis population (mITT) consisted of 389 patients. The results support filing and will be presented in detail.

Conclusion: The first oral treatment for HAT, fexinidazole, is safe and non-inferior to the current first line treatment NECT.
**4OS1.3**

**The efficacy of fexinidazole in children and stage 1 adult patients**

Bardonneau, C. \(^1\)

\(^1\)Drugs for Neglected Diseases initiative, Geneva, Switzerland

**Aim:** To demonstrate the success rate of an oral regimen of fexinidazole at one year follow-up in adults and children of 6 years old and over 20 kg body weight with stage 1 and stage 2 *T. b. gambiense* sleeping sickness (HAT) is better than an unacceptable rate of 80%. Cure was defined as patient alive, with no evidence of trypanosomes in any body fluid, and CSF WBC ≤20 cells/μL.

**Methods:** Two additional open-label cohorts to the pivotal Phase II/III study were completed in 8 sites in DRC in 2016, with once a day oral administration of fexinidazole with food for 10 days (1800mg D1-D4 + 1200mg D5-D10 for adults and children over 35Kg body weight, and 1200mg D1-D4 + 600mg D5-D10 for children between 20 and 35Kg body weight). The primary endpoint was reached for all patients at 12-months’ follow-up, and 18 months’ follow-up will be completed in April 2017 for the adults and July 2017 for children.

**Results:** 230 adult patients were included, mostly with stage 1 and some with early stage 2 of the disease. 125 children between six and 14 years with all stages of the disease were included in a second cohort (69 stage 1 patients, 19 early and 37 late stage 2 patients). Initial results indicate that efficacy is very high in these patient populations. The results of these studies will add to the initial safety package. No patient was discontinued to safety events.

**Conclusion:** The first oral treatment for HAT, fexinidazole, is safe and effective in patients with both stages of the disease in both adults and children. Extending the use of fexinidazole to both stages of the disease could avoid the requirement for painful lumbar puncture to determine the stage and hence the choice of treatment.

---

**4OS1.4**

**Working together across continents to organize and run clinical trials in remote areas**

Mutombo Kalonji, W \(^1\), Valverde Mordt, O. \(^2\)

\(^1\)Drugs for Neglected Diseases initiative, Kinshasa DRC; \(^2\)Drugs for Neglected Diseases initiative, Geneva, Switzerland

**Aim:** This session will be a dialogue between Dr Wilfried Mutombo Kalonji, Co-ordinating investigator for the trials in DRC and Dr Olaf Valverde, Medical manager at DNDi, Geneva. They will discuss the challenges experienced in organizing and running clinical trials for fexinidazole in 10 district hospitals in DRC.

**Methods:** The first challenge to be overcome was the need to improve local infrastructure, equipment, and training to achieve the required international standards for clinical trials. This was achieved by a needs assessment to evaluate each trial site and the availability of local staff, then investments and training was tailored with support from DNDi in Geneva. The second challenge was to ensure follow up of patients until 24 months. Patients who had been cured were not always committed to returning to the hospital for follow-up, knowing that this would involve a painful lumbar puncture to confirm cure. In certain cases, medical site staff travelled for more than a day by motorbike in order to visit patients in their homes. In other cases, where patients had moved, the coordination team in Kinshasa followed up the patients.

**Results:** Three clinical trials have been successfully run so far. A positive by-product of the investment in clinical trial sites has been the opportunity to improve the general environment of care in selected health structures.

**Conclusion:** It is possible to run clinical trials in remote settings with limited infrastructure if there is a commitment to investing in the sites and local infrastructure, and if partners in the field who are dedicated to their mission are guaranteed good support.
Access to fexinidazole and its potential impact on the global strategy to eliminate sleeping sickness
Lumbala, C.,1 Simarro, P.P.2
1Programme National de Lutte contre la Trypanosomiase Humaine Africaine (PNLTHA), Kinshasa, Democratic Republic of the Congo; 2Drugs for Neglected Diseases initiative, Geneva, Switzerland

Aim: To discuss access to fexinidazole in order that this new oral treatment will impact human African trypanosomiasis treatment policy and reach its potential to contribute to the elimination of the disease.

Methods: In partnership with Sanofi, a submission for fexinidazole is being made to the European Medicines Agency under Article 58, to facilitate access to this treatment in human African trypanosomiasis (HAT) endemic countries. Sanofi will ensure an adequate supply of fexinidazole in terms of both quality and quantity. The challenge of ensuring distribution, particularly in rural areas, will be met by following the current WHO distribution system for other anti-HAT drugs. However, logistics and cost are decreased by fexinidazole’s tablet formulation that does not require heavy or complex packaging. The fact that fexinidazole could be the first ever oral treatment for both stages of HAT will allow treatment of HAT at all levels of the health system and, for the first time in the history of HAT, enable patients to take responsibility for their own treatment at home. In addition, it will facilitate the provision of treatment closer to hard-to-reach populations, enlarging access to treatment as never before and subsequently contributing to the elimination of HAT. Pharmacovigilance will be a shared challenge after adoption, in which HAT endemic countries will need to play a key role.

Results: The development of fexinidazole is an example of DNDi’s approach to partnerships for drug development, in this case with Sanofi. Recruitment into the fexinidazole trials in the DRC has been facilitated by coordination and collaboration with the Sleeping Sickness National Control Programme for HAT.

Conclusion: Access efforts will need to be supported to ensure that fexinidazole positively impacts HAT treatment policy in HAT endemic countries.
Malaria elimination is at a crucial point. On the one hand, malaria morbidity and mortality have fallen substantially since the turn of the millennium as a result of considerable increases in global funding and the deployment of insecticide-treated bed nets and effective first-line drugs [artemisinin combination treatments (ACTs)]. On the other hand, there is an alarming increase in resistance of vector mosquitoes to pyrethroid insecticides and of *Plasmodium falciparum* to artemisinin. Artemisinin resistance arose in Western Cambodia and currently extends across the Greater Mekong Subregion [(GMS), from Vietnam to Myanmar] and has now reached the Eastern border of India. Resistance to chloroquine arose in exactly this same place around 60 years ago, and spread to Africa at a cost of millions of lives. Sulfadoxine–pyrimethamine (SP) was then used to treat chloroquine-resistant *falciparum* malaria and resistance to that drug also emerged in the GMS and spread to Africa. Today the two main malaria control tools are threatened, and without them malaria will surely return with a vengeance as it did before from the 1970s to the 1990s as resistance to the insecticide dichlorodiphenyltrichloroethane and the antimalarial chloroquine spread across the world. History tells us that it would be very unwise to ignore these current threats. On this background an ambitious malaria elimination project, Targeted Malaria Elimination (TME), was started in 2013 in four countries of the GMS: Myanmar, Vietnam, Cambodia, and Laos. TME includes early diagnosis and treatment, community engagement and where appropriate mass administration of dihydroartemisinin /piperaquine with a single low dose primaquine. Parasite prevalence is monitored at 3-monthly intervals using ultrasensitive PCR which can detect and quantify the large majority of *Plasmodium* infections including submicroscopic infections. This approach makes it possible to quantify the impact of TME on malaria prevalence and incidence. Findings from three recently completed studies will be presented in the symposium.
The impact of mass drug administrations on plasmodium parasitaemia in four villages in Vietnam: Findings from a randomised, controlled trial

Nguyen Thuy-Nhien¹, Lorenz von Seidlein²,³, Sue Lee²,³, Nguyen Tuong Vy¹, Truong Le Phuc Nhi¹, Pham Nguyen Huong Thu¹, Do Hung Son¹, Nguyen Thi Nhat Minh¹, Dao Van Hue⁴, Huynh Hong Quang⁵, Le Thanh Dong⁶, Guy E Thwaites¹,³, Arjen M Dondorp²,³, Nicholas PJ Day²,³, Nicholas J White²,³, Tran Tinh Hien¹,³

¹ Oxford University Clinical Research Unit, Hospital for Tropical Diseases, Ho Chi Minh City, Vietnam
² Mahidol Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand
³ Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, Churchill Hospital, Oxford, UK
⁴ Centre of Malariology-Parasitology and Entomology Control, Ninh Thuan Province, Vietnam
⁵ Institute of Malariology-Parasitology and Entomology, Quy Nhon, Vietnam
⁶ Institute of Malariology-Parasitology and Entomology, Ho Chi Minh City, Vietnam

Introduction: Malaria in Vietnam has declined from 274,910 reported cases in 2000 to 15,752 in 2013 a nearly 95% reduction in case load. Similarly, the number of deaths attributed to malaria dropped by 99% from 4,646 in 1991 to 6 deaths in 2013. In 2017 more than 50% of patients treated with ACTs had unsatisfactory cure rates due to multidrug resistance.

Aim: To assess the safety, tolerability, and coverage of mass drug administration (MDA) and its impact on the malaria parasite reservoir, in four villages in Vietnam.

Methods: Following community mobilisation activities, four malaria-endemic villages were randomized to three, monthly rounds of MDA in January 2014 (intervention) or January 2015 (control). MDA consisted of a three-day regimen of 7 mg/kg dihydroartemisinin and 55 mg/kg piperaquine phosphate plus a single low dose primaquine administered to the entire village population who agreed to participate. Cross-sectional surveys were conducted at three-monthly intervals over two years in which blood was tested for Plasmodium by ultrasensitive polymerase chain reaction which has a lower limit of detection of 22/ml.

Results: 97% (2,568/2,646) of the villagers completed at least one round of MDA and 55% (1,455/2,646) completed 3 treatment rounds. At baseline 1,989 participants were tested with uPCR. 54 out of 1989(3%) were found to be infected with P. falciparum; 118 (6%) with P. vivax, 37 (2%) had mixed Pf + Pv infection and 46 (2%) had an infection in which the species could not be determined. P. falciparum prevalence dropped following MDA but increased during the following months. No severe adverse events were attributed to treatment.

Conclusion: Three key factors have been identified which may explain the short duration of parasite clearance in the four Vietnamese villages: 1) high mobility of villagers predisposing to importation of infections, 2) drug resistance could explain slow clearing and recrudescent infections and 3) incomplete participation may have resulted in untreated, subclinical infections remaining in village population.
A cluster randomised trial of mass administration of dihydroartemisinin-piperaquine in a multidrug-resistant area of Cambodia

Tripura R.¹, Peto T.¹, von Seidlein L.¹, Chea N.³, Grobusch M.², Dondorp A.¹
¹Mahidol Oxford Tropical Medicine Research Unit, Mahidol University, Bangkok, Thailand; ²Department of Tropical Medicine, University of Amsterdam, Amsterdam, The Netherlands; ³National Malaria Control Programme, Phnom Penh, Cambodia

Introduction: Mass drug administration (MDA) to interrupt transmission is a strategy for rapid Plasmodium falciparum elimination. Malaria incidence has declined in the Greater Mekong Subregion (GMS) but malaria elimination plans are threatened by multidrug-resistant parasites. The effectiveness of MDA depends on the efficacy of the antimalarials used and the level of coverage.

Aim: To assess the safety and coverage of MDA in villages in western Cambodia and its impact on the malaria parasite reservoir.

Methods: Following community mobilisation activities, four malaria-endemic villages were randomized to three, monthly rounds of MDA in July 2015 (intervention) or July 2016 (control). During MDA, a three day regimen of 7 mg/kg dihydroartemisinin and 55 mg/kg piperaquine phosphate was administered to the entire village population. Cross-sectional surveys were conducted at three-monthly intervals for 12 months in which blood was tested for Plasmodium by quantitative polymerase chain reaction. Treatment records with travel histories were collected from village malaria workers. Rates of asymptomatic and clinical falciparum malaria were calculated.

Results: Coverage with three rounds of MDA was 65% (range 53-74%). 87% (range 75%-97%) of residents participated in at least one round and 13% refused treatment. Comparing intervention vs control villages over 12 months, there were a cumulative 3 versus 12 asymptomatic falciparum infections, 0 versus 16 clinical falciparum infections and 3 versus 28 total falciparum infections. Incidence of any asymptomatic or clinical falciparum was 2/1000 per year versus 14/1000 per year. By the 12th month post MDA, analysis by cluster allocation showed no difference in the prevalence ratio of asymptomatic falciparum infections. One participant had asymptomatic falciparum infection prior to participation in MDA and remained falciparum positive over 12 months. No severe adverse events were attributed to treatment.

Conclusion: No autochthonous clinical falciparum was reported over 12 months following MDA. Good coverage was achieved in all villages and treatment was well-tolerated. MDA has the potential to reduce transmission for malaria elimination but other strategies may need to be incorporated to prolong its effect.
A mass administration of dihydroartemisinin-piperaquine in Savannakhet, LAO PDR: A cluster randomised controlled trial

Koukeo Phommasone1, Bipin Adhikari2, Gisela Henriques2, Tiengkham Pongvongsa3, Panom Phongmany3, Lorenz von Seidlein2,4, Nicholas J White2,4, Nicholas Day2,4, Arjen Dondrop2,4, Paul N Newton1,4, Mallika Imwong2, Mayfong Mayxay1,4, 5

1Lao-Oxford-Mahosot Hospital-Wellcome Trust Research Unit (LOMWRU), Microbiology Laboratory, Vientiane, Lao PDR
2Mahidol Oxford Tropical Medicine Research Unit (MORU), Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand
3Savannakhet Provincial Health Department, Savannakhet Province, Lao PDR
4Centre for Tropical Medicine and Global Health, Nuffield Department of Clinical Medicine, University of Oxford, Oxford, UK
5Faculty of Postgraduate Studies, University of Health Sciences, Vientiane, Lao PDR

Introduction: A large fraction of Plasmodium infections do not cause clinical signs and symptoms of disease and persist at densities in blood that are not detectable by microscopy or rapid diagnostic tests. These infections may be critical as a transmission reservoir in areas of low malaria endemicity.

Aim: To assess the safety and coverage of mass drug administration (MDA) and the magnitude and duration of its effect on the interruption of P. falciparum transmission.

Methods: Following community mobilisation activities, two malaria-endemic villages were randomized in April 2016 to three, monthly rounds of MDA (intervention) and another two villages to control. During MDA, a three-day regimen of 7 mg/kg dihydroartemisinin and 55 mg/kg piperaquine phosphate plus a single low dose of primaquine was administered to the entire village population. Cross-sectional surveys were conducted in all four villages at three-monthly intervals for 12 months during which blood was tested for Plasmodium by quantitative polymerase chain reaction. Treatment records with travel histories were collected from village health workers. Rates of asymptomatic and clinical falciparum malaria were calculated.

Results: Between 85% and 88% of 1006 residents participated in the mass drug administrations in the two intervention villages. All tested participants had cleared their infections 3 months after the start of the MDAs while the parasitaemia prevalence persisted in the control villages. Two severe adverse reactions were recorded. The three-monthly parasite prevalence surveys will be completed in April 2017. The first assessment of the impact of the intervention will be presented.

Conclusion: Mass drug administrations with dihydroartemisinin-piperaquine plus a single low dose of primaquine was feasible, safe and well-received in remote villages of Lao PDR. The consequences of the impact assessment will be discussed.
Introduction: Targeted malaria elimination (TME), a package of interventions, including mass drug administration (MDA), is currently under study across the Greater Mekong Subregion (GMS). In target communities, a high level of coverage is necessary to ensure the success of TME to interrupt local falciparum malaria transmission. Coverage depends on a range of factors, particularly the local social context and community engagement activities – village meetings, health education etc. – that accompany TME.

Aim: To explore the role of community engagement towards increasing TME coverage in targeted communities across the GMS.

Methods: Data were collected at TME study sites in four countries (Cambodia, Laos, Myanmar and Vietnam). Community engagement messages focused on the local malaria situation (anti-malarial drug resistance and asymptomatic malaria), study aims, and potential benefits. Qualitative (in-depth and semi-structured interviews, focus groups, and observations) and quantitative methods (questionnaires) were employed. Respondents included members of target communities, village leaders and health/study staff delivering the interventions.

Results: Community engagement activities (gaining permission from leaders, house-to-house visits, village meetings and recruiting villagers to assist with study) were intensive and challenging. Population coverage varied across the sites, between villages and over the three rounds of MDA: from below 40% to above 90%. Various factors influenced the observed differences. High coverage was linked to recognizing malaria as a local health concern, a demand for Western pharmaceuticals and/or trust in TME staff. Along the Thai-Myanmar border, low coverage was linked to the fragmented nature of communities following years of armed conflict and the high proportion of short-term residents who had little interest in community-wide interventions. In Cambodia, villagers conflated seasonal health complaints with “side effects” of the anti-malarial and this contributed to decreased coverage in the second round. In this instance, responsive community engagement led to increased coverage in the third round.

Conclusion: Achieving sufficiently high coverage of MDA to interrupt local falciparum transmission remains a challenge because of the complex social circumstance in target communities in the GMS. With responsive community engagement, it is possible to achieve high coverage.
The way forward: The way to malaria elimination in the GMS
Arjen Dondorp
Mahidol-Oxford Tropical Medicine Research Unit (MORU), Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand

Prof Dondorp will summarise the findings presented in the symposium and based on these findings will discuss approaches to accelerate the elimination of malaria from the Greater Mekong Subregion (GMS). This includes elimination activities addressing the asymptomatic parasite reservoir, as well as high-quality implementation of conventional malaria control measures: early case management with quality artemisinin combination therapies (avoiding artesunate monotherapies) and single gametocytocidal low dose of primaquine, vector control and surveillance. The village malaria worker (VMW) or community health worker (CHW) networks are a cornerstone for the delivery of all malaria-related interventions and surveillance. Additional, more aggressive, approaches will be important to accelerate malaria elimination, which could include mass drug administrations, potentially in combination with ivermectin and/or vaccinations. Focal screening and treatment strategies need re-evaluation with new highly sensitive point-of-care tests becoming available. Many patients will continue to seek treatment in the private sector, and involving private health care providers in malaria elimination efforts will be crucial. Converting networks of VMWs into CHWs with a broader remit will be essential to ensure continued uptake by the villagers when malaria incidence is going down. In addition, VMW/CHW networks are ideally situated for the collection of essential epidemiological data. The areas with ACT failure are likely to increase over the coming years, and new treatments cannot reasonably be expected within this decade. This necessitates creative use of currently available drugs, including the deployment of triple artemisinin combination therapies, which are currently being trialled.
Introduction: The international community has identified One Health — a multidisciplinary holistic approach that tackles health problems by addressing human, animal and environmental health — as the gold standard for public health. Despite the wide consensus, empirical evidence on how to implement One Health at the community level and its direct and indirect benefits to public health remains scant.

Aim: We report on a new and ongoing project that aims to test the potential of a grassroots “One Health Approach” in disease surveillance for the improvement community health as measured by a set of health indicators such as health attitudes, behaviours, knowledge and disease reporting.

Methods: To assess the potential of a “One Health Approach”, we carry out a randomized control trial that implements a One Health intervention in 200 villages in Eastern Sierra Leone. We collaborate with the ministries of Health and Agriculture to expand the current surveillance system by training and introducing community animal health workers (CAHW) to work in parallel with community health worker (CHW). Selected candidates are trained to become CAHWs. After completion of the CAHW training, both CHWs and CAHWs from the 200 study villages go through a “One Health” training. The scope of such training is to get the health workers familiar with the concept, foster their collaboration and facilitate the formation of a “One Health” approach at grassroots level. In addition, we conduct sensitization meetings in the communities emphasizing the importance of the collaboration between health workers, as well as of community engagement, in order to maximize the effectiveness of One Health in improving community health and preventing outbreaks like the one from the 2015 Ebola (EVD) crisis.

Results: Across a range of indicators, we compare treatment to control communities that do not take part in the intervention. In particular, we analyse the impact of One Health in a variety of health outcomes, attitudes, behaviours and knowledge.
4OS3.2

Capacity building and strengthening laboratory services for humans and animals
Bonney K.1, Koroma B.2, Oskam L.3, Ampofo W.1, Koram K.1
1Virology Dept. Noguchi Memorial Institute for Medical Research, Accra, Ghana; 2 Postgraduate School, Njala University, Njala, Sierra Leone; 3 Laboratory Strengthening, DATOS, Amsterdam, The Netherlands

Introduction: Laboratories are essential for efficient, quality and cost-effective healthcare, especially when health systems are weakened by both internal and natural causes. Against this backdrop, the Royal Netherlands Embassy in Ghana devoted funds to support a 22-month project, “Preparedness against Ebola and other emerging infectious diseases in Sierra Leone and Guinea”. Three interrelated work packages, including the laboratory strengthening component, were constituted to achieve the ultimate goal.

Aim: To strengthen zoonotic and public health laboratory services and ensure rapid and safe sample handling and management, as well as accurate testing and results communication in an effective response to selected infectious diseases with epidemic potential.

Method: A laboratory facility at Njala university which is located in a rural area was renovated and upgraded to Biosafety level 2 with an added capacity to perform preliminary diagnoses of highly infectious disease-causing viral agents. Staff capacity development training was accomplished on Biosafety, Biosecurity and Good Laboratory Practices as well as technical and skills acquisition training on the serological and molecular detection of mainly endemic viral diseases with the potential to cause epidemics. Additionally, Laboratory Quality Management (LQM) training was offered to staff to implement recognized international laboratory standards.

Results: With the project nearing completion, identifiable outcomes have been achieved. Technical knowledge of laboratory staff increased and facilities and equipment for routine diagnosis have been upgraded. There is an established cooperation between the public health and zoonotic laboratories regarding emerging outbreaks of zoonotic diseases with epidemic potential. Moreover, the project has initiated the implementation of external quality assurance and quality management systems based on ISO15189:2012. A link with the government has been established through the Ministry of Health and Sanitation to ensure embedding the laboratory services into the health system of the country. Challenges encountered are the limited Human Resources with capacity to work on Biosafety level 2 laboratories in rural areas in Sierra Leone.

Conclusion: The One Health concept has been reinforced as the Departments of Animal Science and Environmental Health Sciences of Njala University are actively working together in ensuring the ultimate goal of the project.
**4OS3.3**

**Strengthening social accountability through RBF (Results Based Financing)**

Toonen J.¹, Habineza C.², Kaba A.³, Bulthuis S.¹

¹Health Unit, KIT - Royal Tropical Institute, Amsterdam, The Netherlands; ²HDP - Health Development Performance, Kigali, Rwanda; ³Ministry of Public Health of the Government of the Republic of Guinea, Conakry, Guinea

**Introduction:** The Ebola outbreak in Guinea has shown the weakness of the providers-community interface; and more specific the limited role the community plays in managing health care at their level. As a consequence of the way the outbreak was tackled, the Community had lost much of its confidence in health services.

**Aim:** To restore the Community’s confidence in health providers, and to strengthen the Community’s role after the Ebola outbreak in Guinea, through introducing a system of social accountability.

**Methods:** Results Based financing (RBF) is before all known as a health financing mechanism – by paying for verified results. However, in designing the system for RBF, changes need to be introduced to the local heath governance-structures. Which means an opportunity for strengthening social accountability in health systems: one of the RBF principles state: introduce a separation of functions to avoid conflicts of interests. A capitalisation exercise was carried out to document experiences so far.

**Results:** The MOH of Guinea was assisted by KIT/HDP in designing a RBF approach adapted to the national context. Community (representatives) received the role of “purchaser”, they state the expected results, they sign a contract with providers, they verify the results, they sign for the Results Based Payments. Also, part of the contracted results are the notification of suspected outbreak cases by the Community Health Workers. The theoretical design has been tested in a pilot district (Mamou). The capitalisation showed that health workers and community representatives thought quality of services had improved much, conditions were more hygienic, that services were available 7/7-24/24; referral had increased, there were no under-table payments anymore, patient-provider communication had improved, utilisation of services had increased, VHW were more motivated, working relationships had improved much.

**Conclusion:** Services supply have improved a lot in the pilot district – although not one RBF penny had been paid yet: providers became more responsive to the needs, wants and demand of the community because it was clearly defined on what they would be held to account, by whom, and what would be the (financial) consequences. Still, more lots of coaching is needed.
4OS3.4
Increasing the resilience and preparedness of EBV and other emerging diseases in Sierra Leone and Guinea through collaboration achieved between both the human health and animal health working in various systems and sectors (One Health Concept)
Van der Broek A., Zuleta I.
KIT - Royal Tropical Institute, Health Unit, Amsterdam, The Netherlands

Introduction: In this project a broad variety of organizations and disciplines participated in groups acting in different systems such as the Community System, the Laboratory System, the Health Sector and Agriculture Sector. The One Health Concept was chosen as the common denominator; where the communities were positioned centrally for information and accountability; and where continental experiences (Sub Sahara Africa) were used as guiding examples. This shared approach by multiple sectors and actors is an important condition for containment of emerging disease.

Aim: This session aims to inform about the successes and challenges when adopting the One Health concept in a 2.5 year project. When embarking into multidisciplinary and multi-sectorial collaboration, establishment of good lines of communication proved to be a challenge but during the project various successes were made in favour of One Health concept.

Results: The group working on community disease surveillance in Sierra Leone could meet on individual basis with the relevant stakeholders of the group (MoHS, MAFFS, FAO, INGOs) and even though the stakeholder were interested in the One Health concept cross collaboration was not seen. After continuous meetings and insistence from the local coordinator of the project, membership was given to the One Health thematic working group, where is discussed how different organisations are working and how these organisations can continue working together at state, district, and community level. Similarly, the group working on social accountability through RBF in Guinea played a key role in the communications between MoH, WB and other international donors and implementers, in order to enable the creation and implementation of a unique model of RBF for Guinea, as well as the financial support from international agencies. Beyond dialogue some relevant stakeholders have signed bilateral agreements through MoUs, for example: In Sierra Leone MoHS and MAFFS, in Guinea MoH and WB and academic institutions Njala University and the Noguchi Memorial Institute for Medical Research are considering a bilateral agreement.

Conclusion: Despite all partners have given room to stakeholders from other systems to participate in their activities, it remains a challenge to translate the One Health concept from a policy to practice.
Enhanced TB laboratory diagnosis and treatment in resource-limited settings – The Lambaréné Experience

Abraham Alabi for the CERMEL Tuberculosis Capacity Development Group

1Centre des Recherches Médicales de Lambaréné (CERMEL), Lambaréné, Gabon
2Eberhard Karls Universität, Institut für Tropenmedizin, Tübingen, Germany
3Center of Tropical Medicine and Travel Medicine, Department of Infectious Diseases, Amsterdam Medical Center, University of Amsterdam, The Netherlands
4Programme National de Lutte contre la Tuberculose (PNLT), Ministry of Health, Gabon
5National Reference Center for Mycobacteria, Forschungszentrum Borstel, Borstel, Germany

Background: A major obstacle to effective tuberculosis (TB) control is lack of adequate laboratory infrastructure; thus limiting patients’ early treatment enrolment and hampering effective treatment outcome monitoring. In response to this urgent need, CERMEL TB Laboratory was established in 2009. We hereby report on its progress and contribution to the strengthening of Gabon’s national TB Control Programme (PNLT) and to capacity building in Gabon and Central Africa.

Methods: Between July 2009 and January 2010, an old building was refurbished and dedicated as the CERMEL TB Laboratory. Routine and research activities started with smear microscopy, and gradually increased to include TB culture, drug susceptibility testing (DST), and molecular techniques e.g. Xpert MTB/RIF and GenoType MTBDRPlus Line Probe assay. Both internal and external staff training was provided through a DZIF TB project collaboration with the German Mycobacteria Reference Centre, Borstel, Germany and by now also provide training to staff of Gabon PNLT and other stakeholders in Central Africa.

Results: We currently provide diagnostic services to hospitals in Lambaréné, conduct research and serve as the Referral Laboratory for MDR-TB diagnosis in Gabon. We conducted a first TB epidemiology study in Gabon, sized-up an outbreak of MDR-TB in the region, established a treatment unit for MDR-TB, and started contributing to DR-TB clinical trials.

Conclusion: Establishing our laboratory has led to significant progress in the understanding of TB epidemiology in Gabon, enhanced capacity in the diagnosis, treatment and control of TB, as an example of how South-South and North-South collaboration could be mutually beneficial.
Tuberculosis treatment outcome and drug resistance in Lambaréné, Gabon – A prospective cohort study

Sabine Bélard for the CERMEL Tuberculosis Capacity Development Group

1Centre des Recherches Médicales de Lambaréné (CERMEL), Lambaréné, Gabon
2Eberhard Karls Universität, Institut für Tropenmedizin, Tübingen, Germany
3Center of Tropical Medicine and Travel Medicine, Department of Infectious Diseases, Amsterdam Medical Center, University of Amsterdam, The Netherlands
4Programme National de Lutte contre la Tuberculose (PNLT), Ministry of Health, Gabon
5National Reference Center for Mycobacteria, Forschungszentrum Borstel, Borstel, Germany

Background: We assessed TB epidemiology in Lambaréné, Gabon, a Central African country ranking 10th in terms of TB incidence rate in the 2014 World Health Organization tuberculosis report.

Methods: This prospective observational cohort study recruited patients who presented with symptoms of active TB and who were initiated on TB treatment. Demographic, clinical and bacteriological data were collected at enrolment as well as two and six months after treatment initiation. Mycobacterial culture and resistance testing as well as molecular species identification were performed at the German National Reference Center for Mycobacteria in Borstel, Germany. Case definitions were based on the WHO’s Definitions and reporting framework for tuberculosis – 2013 version for adults and on Graham et al. 2012 for children.

Results: In Lambaréné, between 2012 and 2013, 201 adult (85%) and pediatric (15%) TB patients were enrolled and followed-up: 66% had bacteriologically confirmed TB and 95% had pulmonary TB. Sputum microscopy was positive in 125/173 (72%) and sputum culture in 105/150 (70%). Based on WHO classification 165 (82%) were new TB patients, 30 (15%) patients were previously treated for TB and for 6 (3%) patients previous TB history was unknown. The HIV co-infection rate was 42% in adults and 16% in children, median (IQR) CD4 count was 130 cell/µl (56;227). Mycobacterium tuberculosis and M. africanum were identified in 82% and 16% of patients, respectively. Isoniazid (INH) and streptomycin yielded the highest resistance rates (13% and 12%, respectively). The multi-drug resistant TB (MDR-TB) rate was 4/91 (4%) and 4/13 (31%) in new and retreatment TB cases, respectively. Treatment success based on WHO definitions was achieved in 53% of patients, of these 15 (8%) were classified as cured; 21 (10%) patients died. In TB/HIV co-infected patients, mortality rate was 25%.

Conclusion: In this setting, TB epidemiology is characterized by a high rate of TB/HIV co-infection and low treatment success rates. MDR-TB is a major public health concern; the need to step up in-country diagnostic capacity for culture and drug susceptibility testing as well as access to second-line TB drugs urgently requires action.
Multidrug-resistant *Mycobacterium tuberculosis* outbreak strains in Gabon

Patrick Beckert for the CERMEL Tuberculosis Capacity Development Group

1Centre des Recherches Médicales de Lambaréné (CERMEL), Lambaréné, Gabon
2Eberhard Karls Universität, Institut für Tropenmedizin, Tübingen, Germany
3Center of Tropical Medicine and Travel Medicine, Department of Infectious Diseases, Amsterdam Medical Center, University of Amsterdam, The Netherlands
4Programme National de Lutte contre la Tuberculose (PNLT), Ministry of Health, Gabon
5National Reference Center for Mycobacteria, Forschungszentrum Borstel, Borstel, Germany

**Background:** Emergence of multidrug-resistant tuberculosis (MDR-TB) challenges the healthcare systems worldwide. In sub-Saharan Africa with its high rate of HIV co-infected people, the effective transmission of MDR-TB is a threatening scenario. To prevent spreading of MDR strains and apply effective treatment we analyzed *Mycobacterium tuberculosis* complex (MTBC) strains from a rural area in the high incidence country Gabon.

**Methods:** MTBC samples were collected from 2011 to 2015 at the Albert Schweitzer Hospital in Lambaréné, Gabon. The isolates were sent to the Research Center Borstel, Germany for drug susceptibility testing and classical molecular genotyping (24-loci MIRU-VNTR and spacer oligonucleotide typing). In addition all strains were analyzed by whole-genome sequencing (Illumina MiSeq and NextSeq 500).

**Results:** We collected 346 MTBC isolates, among which 288 (83.2%) were fully susceptible, 33 (9.5%) MDR and 25 (7.2%) non-MDR. The major lineages and sublineages identified by genotyping were Euro-American Superlineage (302 isolates; Cameroon 95, Haarlem 67, LAM 64, Gabon H37Rv like 47), *M. africanum* (27 isolates), EAI (1 isolate) and Beijing (1 isolate); 15 isolates could not be assigned to a previously described lineage. 26 (78.8%) MDR isolates were classified as Haarlem genotype and 22 (66.7%) of those MDR strains were part of one cluster. Whole-genome sequencing analysis conferred the clonality of the Haarlem MDR strains and 24 (72.7%) MDR isolates were grouped into a transmission network (pairwise genomic distance < 12 SNPs).

**Conclusion:** Our analysis revealed a diverse population structure of MTBC strains causing TB in central Gabon, spreading since probably 2006. The TB epidemic is mainly driven by a variety of strains belonging to the Euro-American Superlineage (87.3%) as well as a smaller proportion of *M. africanum* strains (7.8%). Alarmingly 9.5% of the isolates were already MDR and 72.7% of the MDR strains were grouped into one cluster of strains. To break the chain of transmission of the MDR Haarlem outbreak strains and prevent further spreading, we established a molecular test assay to rapidly identify patients infected with the outbreak strains.
Implementation of multidrug resistant tuberculosis (MDR-TB) treatment in Gabon: Lessons learnt from the field

Ronald J Edoa for the CERMEL Tuberculosis Capacity Development Group

Centre des Recherches Médicales de Lambaréné (CERMEL), Lambaréné, Gabon
Eberhard Karls Universität, Institut für Tropenmedizin, Tübingen, Germany
Center of Tropical Medicine and Travel Medicine, Department of Infectious Diseases, Amsterdam Medical Center, University of Amsterdam, The Netherlands
Programme National de Lutte contre la Tuberculose (PNLT), Ministry of Health, Gabon
National Reference Center for Mycobacteria, Forschungszentrum Borstel, Borstel, Germany

Background: Multidrug-resistant tuberculosis (MDR-TB) is an emerging health concern for populations in sub-Saharan Africa. In May 2016, the WHO recommended a 9-12 months short regimen scheme for MDR-TB treatment known as the ‘Bangladesh regimen’. However, limited data exist on its implementation in affected countries as well as on the evaluation of direct and indirect cost. In 2015, we started the evaluation of the Bangladesh regimen in a cohort study prior to WHO endorsement.

Methodology: The study started in September 2015 in Lambaréné (Gabon) and is still ongoing. Approvals from the National Ethic Committee of Gabon and the Ministry of Health were obtained. Intensive training of the hospital health workers was conducted, as well as information and education of the local community. Patients were recruited from hospitals and sputum specimen tested with GeneXpert. They received second line anti-tuberculosis drugs during a 4-month intensive phase followed by a 5-month continuation phase. Sputum smears and cultures were done every month. Adverse events were monitored daily. Direct and indirect costs were calculated.

Results: So far, several patients have already completed their treatment, of which the first four were included in this preliminary analysis. They all were HIV negative and presented each with poor health and progressed extensive pulmonary disease on inclusion. Treatment of these patients resulted in a significant clinical improvement. Sputum culture conversion rate was 100% at 4th month of treatment. One patient developed a marked hearing loss and one a transient cutaneous rash. Direct cost for treatment was 9,527 Euros on average per patient. Detailed analyses are currently going on to assess cost related factors as well as indirect cost. The implementation of MDR-TB treatment in Gabon was accompanied by fear and stigmatisation of the patients. Physicians needed to be educated to rely on the 9-month short regimen treatment.

Conclusion: Our preliminary data indicate that MDR-TB treatment with a 9-month regimen may lead to sustained culture negativity and sustained clinical improvement of affected patients. However, cost and logistical hurdles remain high and the implementation can be followed by incomprehension.
Background: In sub-Saharan Africa, global mobilization to combat HIV, TB and malaria has promoted healthcare systems reinforcement. Central African countries such as Gabon, however, with oil-based upper middle income levels, low population density and comparatively low disease burden, have so far failed to attract international donor attention. Disease control programs remain fragile and perform sub-optimally. In TB, effective interventions have yet to be endorsed and/or implemented. To address these challenges, innovative collaborative models must be developed.

Methods: Since 2009, CERMEL invested in developing TB clinical research capacity (EDCTP and DZIF support). Early efforts focused on characterizing local TB epidemiology. Special attention was directed at establishing a strong collaborative framework with Gabon MoH. In December 2014, a MoU was signed with the National TB program including five domains of intervention: diagnostic services for TB and MDR TB; support for TB patients' clinical management; public HR training and mentorship; technology transfer; fostering locally relevant clinical research. A TB focal point is ensuring liaison with NTP, national authorities and local technical agencies (WHO).

Results: CERMEL mobilized funds (BMBF) allowing rapid introduction of second line drugs in Gabon and supported setting up of MDR TB management units within national hospitals, piloting a short duration regimen in line with the recent WHO endorsement. Fast-track uptake of CERMEL TB epidemiology data and provision of expert mentorship to NTP staff proved instrumental for the successful elaboration of a Global Fund TB concept note. CERMEL was selected as GF grant sub-beneficiary, standing in for yet-to-be set-up national structures (National TB Reference Laboratory) and overseeing technically more complex activities (National Drug Resistance Survey). CERMEL also actively contributes to national TB control strategies and guidelines updates. A detailed rollout plan has been developed to ensure timely and sustainable transition to national partners. In June 2016, CERMEL was granted the status of privately owned public utility by the Gabonese state.

Conclusion: This public private partnership model contributed to increase Gabon’s attractiveness for international donors, accelerating the national TB control agenda. CERMEL gained recognition for its growing expertise in TB and expanded its collaborative network.

Towards improved tuberculosis control – Why small countries matter
Martin P Grobusch for the CERMEL Tuberculosis Capacity Development Group

In this summary-and-discussion session, a brief synopsis of the above-presented development steps from a fledgling TB laboratory to a major contributor to control TB in a comparably small African country will be provided. An attempt will be made, by interaction with contributing speakers and the public, to extrapolate from this individual example to the broader picture of what role smaller (and with regard to TB epidemiology and control somehow neglected) countries play in the quest for improved TB control, or even elimination, on a global scale.
Achievements of multidrug therapy in the control of leprosy
Smith W.C.S., Aerts A., Sauderson P., Kawuma J., Kita E., Virmond M.
1Institute of Applied Health Sciences, Dentistry, University of Aberdeen, Aberdeen, UK; 2Novartis Foundation, Basel, Switzerland; 3American Leprosy Missions, Greenville, South Carolina, USA; 4German Leprosy Relief Association, Kampala, Uganda; 5Sasakawa Memorial Health Foundation, Tokyo, Japan; 6Instituto Lauro de Souza Lima, Bauru, Brazil

Introduction: Programmes of leprosy control were implemented in the 1950s and 1960s based on detection of leprosy and treatment with dapsone monotherapy. Dapsone treatment involved daily doses taken over many years. The mode of transmission of infection was unclear and the incubation period was estimated to be many years. By the 1970s, there were increasing reports of drug resistance to dapsone which threatened leprosy control. In 1981 in response to this growing threat, WHO recommended Multidrug Therapy (MDT), a shorter, 3-drug regimen using rifampicin, clofazimine and dapsone.

Aim: Review of the achievements of multidrug therapy in the control of leprosy paving the way for the introduction of interventions to interrupt transmission

Methods: Literature searches included PubMed for articles published up to December 2015, searches of the World Health Organization and Infolep websites, as well as authors’ personal files.

Results: Global implementation of the 1981 MDT recommendations took about 15 years to achieve. In 1985 there were 5.3 million patients receiving MDT. By 1991, the figure had fallen to 3.1 million and by 2000, to around 600,000, a drop of almost 90%. Shortening of the treatment regimen and achieving 100% coverage with MDT were important contributing factors for this achievement. Two other actions proved vital; one was the WHO resolution in 1991 to set a global goal for all leprosy endemic countries to eliminate the disease as a public health problem by reducing its prevalence to less than one case per 10 000 of the population by 2000. The other was the global donation of the MDT drugs first by the Nippon Foundation and later by Novartis, the healthcare company that developed rifampicin and clofazimine. Since 2000, about 250 000 new patients are detected every year.

Conclusion: MDT was introduced to combat the growing threat of resistance to dapsone. However global coverage with this new shorter regimen led to a dramatic fall in prevalence of registered patients facilitated by the WHO global resolution and the donation of MDT drugs. This reduction in prevalence has paved the way for an all-out campaign by a global leprosy coalition to reduce the incidence to zero.
4OS5.2
Emerging evidence from the Leprosy Post-Exposure Prophylaxis (LPEP) program
Richardus J.H.1, Barth-Jaeggi T.2,3, Cavaliero A.2, Mirza F.4, Aerts A.4, Tiwari A.1, Steinmann P.2,3
1Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands; 2Swiss Tropical and Public Health Institute, Basel, Switzerland; 3University of Basel, Basel, Switzerland; 4Novartis Foundation, Basel, Switzerland

Introduction: The Leprosy Post-Exposure Prophylaxis (LPEP) program intends to demonstrate the feasibility and impact of integrating into routine leprosy control programs the concept of post-exposure prophylaxis (PEP) with single-dose rifampicin (SDR) for contacts of leprosy patients. Field work started in 2015 in selected sites in 6 countries and has now grown to 8 countries. A standardized data collection system was developed to collect comparable data across countries.

Aim: To present results of the first two years for the main process and outcome indicators describing the feasibility and impact of the intervention.

Methods: Country-specific protocols taking into account the structure and routine activities of the national leprosy control program were developed based on a generic guidance document. With a view towards eventual integration, the generic project data collection and reporting system was aligned with the routine leprosy data collection system wherever feasible. Data are reported to the district and national level for entry into a project-specific database. Copies of the national database are integrated into the global LPEP database following rigorous quality control by the academic project partners.

Results: The introduction of systematic contact tracing, screening for leprosy and SDR administration to eligible contacts proved feasible in each study setting. By the end of 2016, 76,716 contacts were enlisted and 76,153 had been screened. Overall, 89% of the enlisted contacts received SDR. There are marked differences between countries in the frequency of new cases among contacts. Participation slightly rates differ between settings, but SDR acceptance is universally high. Rifampicin appears to be well tolerated. Current analyses focus on the comparison of new leprosy patients detected through the study with patients diagnosed through the routine program activities to describe and predict the impact of strengthened contact tracing on the local disease epidemiology.

Conclusion: Emerging evidence suggests the feasibility of strengthened contact tracing, introducing leprosy PEP with SDR and collection of high-quality individual data in different settings. Local leprosy control efforts were invigorated through increased motivation resulting from the addition of a novel tool to the current leprosy control efforts and better training.

4OS5.3
Toward a global partnership for zero leprosy transmission
Cavaliero A.1, Addiss D.2, for the Steering Committee on Zero Leprosy Transmission
1Novartis Foundation, Basel, Switzerland
2Task Force for Global Health, Decatur, Georgia, USA

Introduction: Since the introduction of effective multi-drug therapy some 30 years ago, the reported prevalence of leprosy has been reduced by 80-90%. In contrast, the incidence of leprosy has declined much more slowly, about 4% per year during the past decade. To accelerate this trend and further reduce transmission, several leprosy stakeholders met at the Beijing International Leprosy Congress 2016 to explore the possibility of forming a Global Partnership for Zero Leprosy Transmission. This was followed on 9-10 February 2017 by a meeting in Basel of a Steering Committee to further discuss the idea, convened by the Novartis Foundation.

Aim: To determine the feasibility, scope, structure, and priorities of a Global Partnership for Zero Leprosy Transmission.

Methods: The Novartis Foundation and the Steering Committee engaged the Task Force for Global Health, in Decatur, Georgia, USA, to conduct a survey of members of the leprosy community. An on-line survey of leprosy stakeholders will be conducted in May 2017 and key leaders in the leprosy community interviewed. Mixed methods have been used to summarize and describe the ‘sense of the community’ and the degree of alignment on the goal, strategy, structure, membership, financing, and governance of the Partnership. A follow-up meeting to discuss the results and propose a model for the partnership has been held in August 2017.

Results: Key findings of the survey and the proposed partnership model will be presented.

Conclusion: The conclusions from the survey and follow-up meetings of the Steering Committee to discuss the findings of the survey and the proposed partnership model will be presented.
Integration of leprosy post-exposure prophylaxis into drives for retrospective active case finding in Cambodia

Lay S.1, Chan S.2, Cavaliero A.3, AY S.S.4,5, Steinmann P.4,5
1National Leprosy Elimination Program, Phnom Penh, Cambodia; 2CIOMAL, Phnom Penh, Cambodia; 3Novartis Foundation, Basel, Switzerland; 4Swiss Tropical and Public Health Institute, Basel, Switzerland; 5University of Basel, Basel, Switzerland

Introduction: In Cambodia, leprosy elimination, defined as <1 case/10,000 population, was achieved in 1998 at national level. Starting in 2009 the National Leprosy Elimination Program (NLEP) observed an increase in child cases, indicative of continuous transmission of *Mycobacterium leprae*, as well as an increase in grade II disabilities, reflecting a delay in leprosy diagnosis. In response, drives to systematically screen contacts of leprosy patients diagnosed over recent years were organized, implemented by a dedicated team of trained experts.

Aim: To demonstrate the feasibility and impact of tracing contacts of known leprosy patients, screen them for signs of the disease, and administer a single dose of rifampicin (SDR) as post-exposure prophylaxis (PEP) in the frame of drives as a strategy to improve early case detection and reduce transmission.

Methods: The drives approach was developed in the frame of the retrospective active case finding project implemented from 2011-2015. At its core is a mobile team of especially trained doctors and data collection staff. The current study focuses on leprosy patients identified in 31 operational districts (OD) since 2011 and their household and neighbor contacts. Drives are planned based on the verification of the continued presence of the leprosy patients at the registered address by OD leprosy supervisors with the help of local health staff. The drive team then systematically visits all traced patients in an area, receiving informed consent by the patient before screening willing contacts for signs of leprosy disease. Negative contacts are eligible for SDR unless they fulfill any of the exclusion criteria. Contacts of leprosy patients identified in the frame of drives are re-visited one month after the initiation of multi-drug therapy by the new patient.

Results: Findings from three drives targeting over 80 index cases since December 2016 will be presented, with a focus on tracing rates of known patients, participation in the study, and new patients identified among targeted contacts.

Conclusion: Maintaining adequate knowledge about leprosy among health staff in low-endemic settings is challenging. Drives may offer an alternative, and the addition of PEP may further contribute to increased case detection and a reduction of transmission.
Stop the transmission of leprosy: The PEP++ project
Mieras L.M.1, Taal A.T.1, Dijkamp E.1, Richardus J.H.2, Salgado C.3, Kumar A.4, Agusni I.5, Duthie M.S.6, van Brakel W.H.1

1Technical Dept., Netherlands Leprosy Relief, Amsterdam, Netherlands; 2Dept. of Public Health, Erasmus MC, Rotterdam, Netherlands; 3Dermatology Dept., Federal University of Pará Medical School, Belém, Brazil; 4Central Leprosy Division, Ministry of Health, New Delhi, India; 5Dept. of Dermatology, Dr Soetomo Hospital, Airlangga University, Surabaya, Indonesia; 6Infectious Disease Research Institute, Seattle, USA

Introduction: The annual incidence of leprosy is only declining very slowly at a global level and not at all in some countries, like Indonesia. Available evidence indicates continued transmission of \textit{M.leprae} in many areas. Trials in Indonesia and Bangladesh have provided evidence of the effectiveness of a preventive strategy: post-exposure prophylaxis (PEP) using a single-dose of rifampicin (SDR) given to close contacts of new leprosy patients. The efficacy of SDR PEP was close to 60% in both trials. Subsequently, the feasibility of using PEP under operational conditions was demonstrated in the integrated leprosy services in Indonesia from 2012 onwards. In the international LPEP Project, SDR PEP is currently being piloted in a further 7 countries. A main reason for the sub-optimal efficacy of SDR PEP is likely to be that a single dose of rifampicin is insufficient to cure persons who have a substantial bacterial load and are in advanced stage in the incubation period of leprosy. An enhanced chemoprophylaxis regimen is needed to prevent leprosy in this category of contacts.

Aim: To interrupt the transmission of \textit{M.leprae} in high-endemic areas in Brazil, India and Indonesia.

Methods: The PEP++ Project uses a cluster-randomised trial design to compare the efficacy of an enhanced chemoprophylaxis regimen (PEP++) with that of SDR PEP in close contacts who are sero-positive for antibodies against the leprosy-specific ND-O-LID conjugate. PEP++ is a multi-dose regimen comprising moxifloxacin and rifampicin. The PEP++ intervention will complement a novel cluster-based blanket implementation of SDR PEP. Clusters in the participating districts will be identified using GIS technology. Both approaches will be supported by optimised leprosy case detection and treatment services, including health systems strengthening, contextualised community education on leprosy, stigma reduction interventions and involvement of leprosy-affected persons in various roles in their communities.

Results: No results available yet.

Conclusion: The PEP++ Project, a new large multi-country preventive chemotherapy trial for leprosy, aims to provide evidence that a combination of the current SDR PEP and an enhanced chemoprophylaxis regimen called PEP++ will be able to stop the transmission of \textit{M.leprae} in previously high-endemic areas.
4OS6.1
Multi-sectoral approach for prevention and control of malaria and vector-borne diseases
Florence Fouque
VES/TDR/WHO, Switzerland

Vector-borne diseases (VBDs) account for one quarter of all infectious diseases. The prevention and control of these diseases have to include more than a single orientated approach, since the transmissions patterns are driven by complex and dynamics vector-host-pathogens-environment relationships. In this context, a project on how to develop a Multi-Sectoral Approach (MSA) for prevention and control of VBDs is undertaken by the Swiss Agency for Development and Cooperation (SDC), the Canadian International Development Research Centre (IDRC), the Swiss Tropical and Public Health Institute (Swiss TPH) and the VES Unit of TDR/WHO.

The objectives of the project are first to set up the landscape of the MSA approaches through commissioned reviews on the following topics: i) industrial activities and VBDs transmission, ii) integrated strategies for the prevention and control of VBDs, iii) displacement of people and consequences on VBD transmission, iv) impact of environmental changes (climatic, social and others) on VBD cycles, and v) inter-sectoral collaborations and how stakeholders are working together to achieve the implementation of a global strategy. The first part of this project also includes an overall discussion at a workshop, held in June 2017 in Geneva.

The results of some commissioned review on topics i) and ii), as well as the main conclusions of the workshop are presented at the ECTMIH meeting. The expected outputs of the first part of the project are to define research priorities and support research on cases studies on MSA for prevention and control of VBDs. The final objectives of the project are MSAs for prevention and control of VBDs are implemented in several LMIC for several diseases.

4OS6.2
Strategic partnerships at national and sub-regional levels in Asia
Jeffrey Hii
Malaria Consortium, Thailand

The increasing global risk and threat brought by the presence and emergence of artemisinin resistant malaria parasites require the implementation of a multi-sectoral and multidisciplinary approach at multiple levels. Realizing the need to establish and strengthen this dynamic collaboration between sectors and disciplines, development partners have adopted a unified and coordinated approach which conceptually supports and promotes such ideals. This requires strategic partnerships at national and sub-regional levels involving different ministries, civil society, the private sector, development partners and others.

Through strengthening regional collaboration, the Asia Pacific Malaria Elimination Network (APMEN)/Asia Pacific Leaders Malaria Alliance (APLMA) has advocated and engaged the different sectors to proactively and collectively address and to accelerate the fight against malaria and overcome the emergence of drug-resistant strains of the disease. Reaching out to the Ministries of Health, Agriculture, Education, Public Works and Finance will provide cross-sectoral communication and coordination in relation to: a) promoting public health entomology as a career pathway for sustainable integrated vector management; b) aggregating mapping data of plantations/transmission zones and to facilitate streamlined pesticide registration; c) promoting entomology as a training pathway; d) encouraging collaboration with private sector, companies hiring temporary workers, for infrastructure projects in areas of high transmission; and e) advocating for the reduction of taxes and tariffs for vector control products and for the “positive return on investment” for vector control for both malaria and for Aedes-borne diseases.

Academia/government partnerships are needed to accelerate operational research, epidemiological risk assessment and stratification, including GIS and remote sensing; behavioral and ecological studies; and social sciences. The local government plays a critical role in supporting policy and enforcement issues related to private sector project development in the GMS countries. The Mekong Outdoor Malaria Transmission Network has an active program to engage partners from a range of sectors to exchange information, review available tools, and collectively explore solutions to meet these challenges. Existing and new interventions for outdoor transmission of malaria, especially in forest settings, for high-risk groups including short- and long-term forest workers and their families, mobile and migrant populations, as well as the military must be combined into "positive return on investment” for vector control for both malaria and for Aedes-borne diseases.

Country leadership of prevention and control efforts is critical; policies and activities should not be limited to the health sector and should always be evidence-based; action within countries and between countries should be harmonized and strengthened. Adoption of novel tools when validated for operational use is encouraged. The aim is to ensure all countries can achieve success, irrespective of their current capacities and resources with an emphasis on integrated, community-based approaches.
Industrial activities have an important role in the history and development of human settlements, and can contribute considerably to the economies of resource-rich countries. Despite this, mining, logging, oil and gas, and other extractive operations can impose negative health externalities and are associated with elevated incidence of vector-borne diseases. Malaria in particular is associated with industrial activities due to environmental changes that affect malaria transmission ecology, human movement between malaria transmission zones, and economic and demographic factors.

The published literature provides evidence that the communities and migrant workers in industrial sites are exposed to disease, and may lack the knowledge and means to protect themselves and be protected. Nonetheless, there are examples of large corporations, working in multi-sectoral partnerships, leading successful efforts to reduce the burden of malaria. These efforts can go on to form the foundation of national programmes. Gaining a better understanding of the influence of human activities on vector-borne disease dynamics and vector ecology will help guide future efforts to minimize industrial impacts. Where impacts have already been felt, it is crucial that connections are made between industry actors and the health sector to ensure that vulnerable groups are reached with adequate technologies for protection and treatment.
In December 1943, in the midst of the Second World War, a few pioneers established the Swiss Society of Tropical Medicine and Parasitology (SSTMP). They were courageous, pushed boundaries and had a vision: being humanitarian, exhibiting solidarity and positioning Switzerland on the global landscape. Some dedicated members of the society streamed out to the tropics and established field stations. As we commemorate the 75th anniversary of the SSTMP, we put forth a “Festschrift” and emphasis that core values of the society have remained ever since: providing a platform for exchange across disciplinary boundaries, equity, solidarity and deep partnership that is built on mutual trust. In the meantime, field stations in Côte d’Ivoire and Tanzania have been transformed into major research centres that maintain a broad portfolio of projects, include specialized laboratories with modern technology and contribute to education, training and capacity building. Indeed, reviewing the history of the SSTMP illustrates long-term commitment of Swiss scientists, clinicians, epidemiologists, entomologists, public health experts and veterinarians in the fields of tropical medicine and parasitology. The society offers a unique opportunity for interdisciplinary research and action and has made important contributions to address some of the grand challenges of global health.

Since the renewal of global malaria control efforts in 1998, Switzerland has made substantial contributions to the global fight against malaria. Work on malaria is both wide ranging and deep, contributing in a number of fields. In order to render these contributions more visible to a broader public, and also to strengthen financial resources in this area, all key actors in the country created the Swiss Malaria Group (SMG) in 2007. The main roles of the SMG are: (i) to network all malaria actors around a common long-term vision; (ii) to give Swiss contributions a high degree of public visibility; and (iii) to strengthen the social corporate responsibility case within the private sector. We will present highlights about Swiss contributions in key areas of basic discoveries on the biology of Plasmodium spp.; drug, insecticide and vaccine discovery processes; role of Swiss industry in product development; role of non-governmental organizations in malaria control; and bilateral and multi-lateral investments. Taken together, tens of thousands of lives have been directly saved over the past 15 years thanks to Swiss research and implementation efforts. This is a major contribution made by a small but highly innovative country. Efforts to bring these efforts to a broader political and general audience have had some successes. Among other, we estimate that “malaria” has become a household name in Switzerland, facilitating request for donor funding and boosting media interest.
4OS7.3
Snakebite – and the fight to bring it on the neglected tropical disease list
Gabriel Alcoba\textsuperscript{1,2}, François Chappuis\textsuperscript{1}
\textsuperscript{1} Division of Tropical and Humanitarian Medicine, Geneva University Hospitals, Geneva, Switzerland
\textsuperscript{2} Médecins sans Frontières, Operational Centre Geneva, Geneva, Switzerland

The Geneva University Hospitals (HUG), Switzerland and the B. P. Koirala Institute of Health Sciences, Nepal have been partners in educational, research and operational snakebite projects in eastern Nepal since 2000, and more recently in Myanmar and Cameroon. Collaborative research projects have focused on determining the burden of snakebite at community level, assessing determinants of death and implementing interventions aiming at reducing mortality, developing innovative diagnostic tools for epidemiological and clinical use, and evaluating the efficacy and safety of different dosages of antivenom. In some Médecins sans Frontières (MSF) medical projects in sub-Saharan Africa (e.g. Central African Republic, Ethiopia and South Sudan), snakebite envenoming is a prominent cause of hospitalization and access to appropriate antivenom a growing concern. Both MSF and the HUG have recognized that snakebite shares most – if not all – the characteristics of neglected tropical diseases (NTDs) listed by the World Health Organization (WHO), such as being a proxy for poverty and disadvantage, having an important impact on morbidity and mortality, causing stigma and discrimination and being neglected by research. MSF and HUG naturally joined the efforts of the Global Snakebite Initiative, the African Society of Venimology, Ministries of Health (e.g. Costa Rica), research institutes, among others, who have successfully lobbied to bring snakebite onto the WHO NTD list. This achievement should lead to a roadmap, coordinated by the WHO, specifying research priorities and control objectives, and should facilitate access to funding.

4OS7.4
Neglected tropical disease interventions in a conflict zone: schistosomiasis at Lake Chad
Helena Greter\textsuperscript{1,2}, Gabriel Alcoba\textsuperscript{3}, Peter Steinmann\textsuperscript{1,2}, Bongo Naré Ngandolo\textsuperscript{4}, Jakob Zinsstag\textsuperscript{1,2}, Jürg Utzinger\textsuperscript{1,2}
\textsuperscript{1} Swiss Tropical and Public Health Institute, Basel, Switzerland
\textsuperscript{2} University of Basel, Basel, Switzerland
\textsuperscript{3} Médecins Sans Frontières, Geneva, Switzerland
\textsuperscript{4} Institut de Recherche en Elevage pour le Développement, N’Djamena, Chad

Schistosoma haematobium and S. mansoni are co-endemic in the Lake Chad region in Central Africa. In three out of four neighbouring countries, namely Cameroon, Niger and Nigeria, successful intervention programmes are in place and have demonstrated substantial progress in reducing human infection rates. Partnerships between international non-governmental organisations (NGOs) and donors together with the respective Ministries of Health coordinate these schistosomiasis control programmes. Meanwhile, in Chad, no coordinated schistosomiasis intervention is being implemented. In recent years, Lake Chad has become heavily affected by terrorists and resulting military activity. The crisis has led to large cross-border population movements in the Lake Chad region. Additionally, thousands of people from the islands in Lake Chad were forced to move to the lake’s shores. In response to the ensuing humanitarian crisis, international NGOs have established health services which, today, have reached a density not seen before, when the limited capacity of the governmental health system struggled to provide even basic health services to these remote settings. Building on this unprecedented infrastructure, the crisis may provide an opportunity to launch schistosomiasis control also on the Chadian shores of Lake Chad.
The Swiss Alliance against Neglected Tropical Diseases (SANTD) has been created in spring 2017 by a broad range of Swiss institutions, including academia, civil society organisations, donors, private sector companies and public institutions. SANTD has as its aims to creating a stronger, more visible and better-resourced Swiss answer to the global challenge of NTDs, and sustaining and increasing Swiss commitment to the control, elimination and/or eradication of the NTDs. It will pursue its vision for a world free of NTDs by (i) enhancing awareness for NTDs; (ii) improving relevant training at universities; (iii) developing improved diagnostic technologies and innovative medicines; (iv) advocating for improved access to new diagnostic technologies and innovative medicines; (v) encouraging increased financial and political commitment to scaling up control programmes; and (vi) fostering collaboration with other organisations interested in addressing NTDs. Light will be shed on the development, current status and next steps of the SANTD.
A state of mind: Reflections on patient-centered care approaches and experiences in the North and South
Tom Hoerée
Institute of Tropical Medicine, Antwerp, Belgium

Background: Patient centered care can be viewed as an individual characteristic of the health worker. Their interpretation of patient centeredness is derived from the perception of their roles in health care, personal attitudes and beliefs. While concepts can be addressed during training, it's important to acknowledge the spectrum of health worker needs in different contexts (some just discovering PCC to those more familiar with the concept and only needing reinforcement). There is also a need for a more health systems view in the implementation and evaluation of PCC approaches.

Methods: Reflections are drawn from practical experience as a family medicine practitioner and health systems researcher in Belgium and LMICs [1-3]

Results: The perception of the origin of patient problems ranged from a purely biomedical focus (disease) to an overlap with psychological, social and environmental factors. This influenced how different health workers would approach diagnosis and treatment with options ranging from a focus on medication to an overlap with social services, patient organizations, and family/community support. The implementation of PCC was also influenced by the integration of health services with external departments (social, legal and financial); functioning of interdisciplinary health teams especially for psychosocial patient problems like alcoholism; and involvement of patients and their families in decision making.

Discussion: Lessons learnt from the North include the importance of: mapping available health and social services in a local community; extending the scope of PCC from doctors to include nurses working at the periphery and integrated in the local community; promoting shared information and decision making during consultations and discussions among health teams. Expected challenges in LMICs include: cultural and language differences, resource constraints and the attitudes and capacity of health workers.

Conclusion: the design and implementation of PCC approaches therefore needs to be adopted to specific contexts and integrated in the minds and daily practice of those who have to do it. Tools to measure the level of patient-centeredness also need to be validated in diverse contexts.

References:
5OS1.3
Patient-centeredness from education to practice: Towards a personal style of context sensitive patient-centeredness
Angelica Meers
Gynaecologist, University of Antwerp, Belgium

Background: Although communication skills training (CST) enhances patient-centred skills and attitudes, literature indicates the need to explore other aspects of PCC that could be included in medical training and practice, and develop methods of translating education to practice by facilitating more meaningful and continuous learning.

Methods: From a phenomenological perspective, we conducted 15 interviews and 11 focus groups with 4–9 participants/group (n = 67) at two universities to explore the experiences of medical students and doctors and gain a better understanding of the impact of CST on patient-centeredness in the transition to real practice and carried out constant comparative analysis. Improvements of training curriculum have also greatly benefited from student evaluations.

Results: The gap between education and practice is the central phenomenon. Previous research indicates that although CST raises students’ communication awareness and self-efficacy in an ‘ideal’ context, this rarely translates into practice [1]. In addition, communication training alone does not address the differences in personal attitudes and beliefs. PCC training for medical students should be expanded to take into account individual student characteristics (different cultures, attitudes and beliefs); be reinforced in practical assessments during training as well as internship; and included as part of continuous medical education and practice assessments.

Conclusion: PCC training interventions should go beyond communication and include other elements like empathy, trust, decision making; and take into account relational, legal and ethical issues. Flexibility should be allowed in PCC training and practice to accommodate real life situations including different attitudes and beliefs of health workers and patients in different contexts. Co-creation between different actors (health practitioners, patients and health educators) and could lead more comprehensive PCC training programmes and sustainable PCC practice especially in LMICs. Further research is needed to develop the tools and methods of assessing patient-centered care in practice for different cadres of health practitioners (including nurses, laboratory and pharmacy technicians) in different contexts.

Reference:
Understanding patient-centered care approaches at primary health care level in sub-Saharan Africa: The case of Uganda

Waweru E, De Man J, Criel B

Institute of Tropical Medicine, Department of Public Health, Antwerp, Belgium

Introduction: The main aim of the study is to explore current initiatives, opportunities and challenges in the delivery of patient centered care (PCC) in primary health care services in Uganda. A multi-phase, multi-case study approach will support stakeholders in designing implementing and evaluating an intervention revolving around training of health workers based on the De Man et al and the WHO person-centred framework.

Methods: The study is a multi-phase, multi-case study using transformative mixed methods and a transdisciplinary approach to involve relevant stakeholders in the design and implementation of a patient centred care intervention in 8 facilities within the Iganga-Mayuge District Health Surveillance Site in Uganda; and evaluate its impact on the quality of care offered at both public and private primary health facilities.

Results: Observation of clinical consultations in Belgium indicate various aspects of the doctor-patient relationship that contribute to patient centeredness. These include communication, shared information and decision making, clinician perceptions of their identity and roles in patient care, as well as the patient perceptions of their health, illness, and roles. This is in line with the proposed dimensions of patient centered care in literature. Fieldwork in Uganda beginning in April 2017 will provide a more in-depth understanding of this concept and practice in a low income country setting in sub-Saharan Africa.

Conclusions: Patient centred-care (PCC) offers an opportunity for African health systems to build on progress made in primary health care reforms and universal health coverage initiatives, by involving both providers and consumers of services in the identification and implementation of health goals. Considering different social, political, and economic differences in sub-Saharan African countries, patient-centred care strategies and initiatives need to be contextualised for them to be feasible.

References:
Cross learning from mental health care: Lessons for patient centered care in resource-constrained settings

Sarkar N. D. P.¹², De Man J.¹, Criel B.¹
¹Institute of Tropical Medicine, Antwerp, Belgium; ²VU University, Amsterdam, The Netherlands

Introduction: Patient Centered Care (PCC) is a paradigm of care, which is now considered an essential component of understanding not only the structural elements of quality of care and service provision, but also the interpersonal dimensions of care. However, there is limited evidence on this aspect of quality of care in sub-Saharan Africa, despite having important repercussions in terms of patient outcomes (from satisfaction to mortality).

Aim: To present the initial findings and cross-learnings from a PCC-oriented comparative study between the specialist out-patient Mental Health Clinic (MHC) and the general health Out-Patient Department (OPD) of Iganga district hospital in eastern, rural Uganda.

Methods: As part of a larger comparative mixed methods study, particular aspects of PCC such as autonomy support and patient-centred communication were assessed and compared in both clinical setups. A total of 230 pairs of consultation observations and caregiver exit poll questionnaires were conducted at both the MHC and the OPD. 28.7% of these were conducted at the MHC, while the remaining 71.3% were conducted at the OPD. Additionally, twelve (12) in-depth interviews were held with the various clinicians and health workers providing care at both the MHC and the OPD.

Results: Preliminary results (to be completed by October 2017) indicate that neither of the two clinical setups’ health workers provides adequate autonomy supportiveness to patient-caregivers; empowerment in self-management skills is not a priority. However, patient-centred communication, privacy and confidentiality were provided more often to patients and their caregivers in the MHC than in the OPD. This disparity may be attributable to differences in infrastructure, demand and need of services, resource availability, but also discipline-related differences in trainings (such as in empathetic communication and compassionate care).

Conclusion: The transfer of learning from the specificities of the clinical encounter in mental health clinics amongst the ‘Provider-Patient-Caregiver’ triad, allows for a bottom-up understanding of the needs of various patient (and their caregiver) populations. This strategy may prove useful for pragmatic implementation and real-life practice of PCC in general health consultations and care provision in resource-constrained settings.
**5OS2.1**
SHIP - NCD transition project from Myanmar
Ram Jat T

*Project Manager NCD transition project, HelpAge, Myanmar*

**Introduction:** Myanmar is a low-income country where non-communicable diseases are now a more important cause of morbidity and mortality than infectious diseases. The Ministry of Health is preparing a strategy to tackle the epidemic shift.

**Aim:** The University of Public Health Myanmar, University of Medicine 2, Help Age International, and Thammassat University Thailand collaborate in providing evidence that is based on state-of-the art international scientific knowledge, added by local research.

**Methods:** The national and international partners performed an analysis and dissemination of the STEPS survey into NCDs. The developed for the Ministry of Health a draft NCD policy and strategy. They developed and pre-tested training materials for training lower and medium-level staff in prevention and treatment of NCDs and are implementing action research during the roll-out of the training.

**Results:** The consortium of a local university with national and international partners have generated relevant evidence for national policy change.

**Conclusion:** The project in the context of the Support to Public Health Institutes Programme strengthened the University of Public Health in triangular collaboration and capacitated the university to be a partner in health policy development.

---

**5OS2.2**
SPHIP SHARE project in Bangladesh
Rahman Shaheen A, Farous J, Anwar ITM, Haseen F, Azad AK

*Project manager, senior researcher and Principal Investigator SHARE project, Department of Urban Health and Equity, icddr,b, Bangladesh
Assistant Professor, Department Public Health, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
Director General Health Services, Ministry of Health and Family Welfare, Bangladesh*

**Introduction:** Bangladesh is a low-income country, soon becoming a middle-income country, where inequity is increasing. In the rapid urbanisation, slums are increasing in size and population. Access to health services is worse in those areas than in rural areas.

**Aim:** The partners in the consortium consisting of icddr,b (research institute in Bangladesh), Bangabandhu Sheikh Mujib Medical University, University College London and Ministry of Health and Family Welfare, Bangladesh collaborate to find evidence for developing a strategy to increase access to care and improve monitoring and decision-making in health services.

**Methods:** The partners perform a knowledge synthesis of all evidence collected in the last years through systematic and scoping reviews, surveys, surveillance, mapping of health service, routine information systems concerning demand and supply of health services. The have jointly developed tools for better monitoring of health services and improved decision-making in health.

**Results:** Based on internationally developed information tools like DHIS2 the project was able to develop, monitoring tools, decision-making tools and policy-development tools. Bangladesh therefore became one of the front runners in evidence-based decision making and was able to disseminate the knowledge in the Asian region.

**Conclusion:** The triangular collaboration between local and international partners in Bangladesh enabled the consortium to provide government with the necessary information to address healthcare issues and play its role in international development of information policies.
**Introduction:** Uganda is preparing a policy for enhancing Universal Health Coverage in the country. While substantial improvement in health have been made in the country, there is still an unfinished MDG agenda. Issues of equity and accessibility are important in health care as well as quality of services.

**Aim:** Partners in the consortium consisting of Makerere School of Public Health, National Health Users Consumers’ Organisation, Economic Policy Research Centre, National Planning Authority, Institute of Tropical Medicine Antwerp Belgium, Human Science Research Council (HSRC), South Africa, provide the evidence to formulate a sound UHC policy in Uganda.

**Methods:** Research organisations performed reviews, produced a book on UHC, and performed Policy Implementation Barometer surveys to analyse bottlenecks in service delivery. This all feeds into a process of consultation, priority setting and formulation of advice to government, guided by the National Planning Authority.

**Results:** The process of policy formulation is still in full swing. But the consistent participation of researchers, community representatives, technical experts and policy makers in the process is already a success, offering perspective for a broadly supported UHC policy in Uganda.

**Conclusion:** The SPEED project, part of the Support to Public Health Institutes Programme, came on the right time to facilitate research, collaboration and policy dialogue in the country to formulate a UHC policy. Makerere School of Public Health and other research institutes have been able to claim a dominant role in the policy formulation process, based on credible evidence aggregated in triangular collaboration with international research partners.
Quality of artemisinin combination therapies in sub-Saharan Africa and Cambodia, assessed using laboratory analytical techniques
Kaur H.1 on behalf of the Artemisinin Combination Therapy - Drug Quality Programme team
1London School of Hygiene & Tropical Medicine, Departments of Clinical Research, Keppel St, London WC1E 7HT, UK

Introduction: Poor-quality medicines, including falsified, substandard and degraded formulations, pose serious health concerns in malaria endemic countries. They contribute to the rise in drug resistance, can harm or kill patients, and increase the public’s mistrust of health systems. Reports indicating that up to 35% (796 of 2,296) of antimalarial medicines, purchased from 21 Sub-Saharan African countries had failed content analysis drew international attention to the posed threat.

Aim: To assess the geographic prevalence of poor quality artemisinin-based combination therapies (ACTs).

Methods: We purchased over 10,000 ACTs using three sampling approaches (convenience, mystery client and overt), from six malaria endemic countries - Cambodia, Ghana (Kintampo), Equatorial Guinea (Bioko Island), Nigeria (Enugu metropolis and Ilorin city), Rwanda and Tanzania. The stated active pharmaceutical ingredients (SAPIs) were measured in three collaborative laboratories using high-performance liquid chromatography and confirmed by mass spectrometry. Results were expressed as a percentage of SAPIs on the packaging and used to categorise each sample as acceptable quality (compliance with authorised pharmacopeia tolerance limits), substandard (containing either less or more than the acceptable dose), degraded (low SAPIs plus containing products of degradation), or falsified (do not contain the SAPIs).

Results: Our findings were reassuring in that out of the 10,092 samples (142 brands) we only found falsified formulations in two countries: Nigeria (both Enugu state [1%] and Ilorin city [0.8%]) and Equatorial Guinea (Bioko Island [7.3%]). Although substandard medicines were found in all six countries, this did not exceed more than 7%. Results were disseminated to the country-specific Ministry of Health, the stated manufacturers on the packaging as well as the World Health Organization rapid alert system.

Conclusion: Our findings emphasise the need for representative sampling approaches to quantify the quality of antimalarial medicines in endemic countries, and track the scale of ineffective medicines, which jeopardise treatment of a life threatening disease.
Poor quality-medicines: A perspective from the WHO pre-qualification program
Deus Mubangizi
Head of the WHO pre-qualification program, Geneva, Switzerland

Introduction: The WHO Prequalification was established in 2001 in response to the HIV/AIDS pandemic, to guide UN agencies and other international organizations with respect to the quality of antiretroviral medicines for supply to low-income countries. Its services now cover assessment of a range of finished pharmaceutical products in several therapeutic areas, as well as assessment of active pharmaceutical ingredients, and of quality control laboratories. It also provides technical assistance and conducts extensive training activities.

Aim: The WHO medicines prequalification is a concrete contribution to the goal of addressing high-burden diseases in countries with limited access to quality medicines.

Methods: The WHO Prequalification Team conducts assessment and inspection activities; it builds national capacity for manufacture, regulation and monitoring of medicines; and works with regulators to register those medicines quickly. Its strategy has several components:

- apply unified standards of acceptable quality, safety and efficacy
- prequalify finished pharmaceutical products and active pharmaceutical ingredients, based on information submitted by manufacturers, and on inspection of the manufacturing and clinical sites
- prequalify medicines Quality Control laboratories, by comprehensively evaluating their chemical and microbiological testing services based on information submitted by the laboratories, on and inspection of the corresponding premises
- build the capacity of staff from national regulatory authorities, laboratories, manufacturers or other private companies.

Results: The WHO Prequalification Team outputs are the WHO Lists of Prequalified Finished Pharmaceutical Products, of Prequalified Active Pharmaceutical Ingredients, and of Prequalified Quality Control Laboratories; the WHO Public Assessment Reports and the WHO Public Inspection Reports.

Conclusion: Since its inception, the WHO medicines prequalification has improved public health outcomes and value for money, through quality assurance of generic medicines; increased uptake of medicines designed specifically to meet low-income country needs; strengthened regulatory capacity in low-income countries; developed an effective mechanism that significantly reduces registration time for prequalified finished pharmaceutical products; improved capacity to manufacture finished pharmaceutical products and active pharmaceutical ingredients to international standards; and increased the availability of medicines testing services through prequalification of quality control laboratories.
5OS4.1
Magnitude and prognosis of strokes at Bobo-Dioulasso
Kpoda B.N.H.1, Samadoulougu D.R.S.2, Traore T.I. 1, Savadogo G.L.B. 3, Sombie I. 3, Millogo A.2, Dramaix W.M.4, Donnen P.4
1Clinical Research Department, Muraz Center, Bobo-Dioulasso, Burkina Faso; 2Medicine Department, Teaching Hospital Sourou Sanou, Bobo-Dioulasso, Burkina Faso; 3Public Health Department, High Institute of Health Sciences, Bobo-Dioulasso, Burkina Faso

Introduction: Strokes are more and more frequent through the world, mainly in Africa. But their magnitude and their prognosis are less documented in our teaching hospitals.
Aim: Precise magnitude and prognosis of strokes at Bobo-Dioulasso.
Methods: It was a cross-sectional descriptive study. Patients hospitalized between January 1st 2009 and December 31st 2013, with a diagnosis of stroke was retained (with or without CT-scan confirmation) were included in the study. Data was collected from their medical records. The Student or Chi2 tests were used.
Results: There were 967 included cases of stroke. The average age was 61.06 ± 14.35 years with a sex-ratio of 1.58. The annual proportion of stroke was an average of 05.80%, increased overall between 2009 and 2013. The confirmed cases represented 34.23% of all the cases of strokes. Mortality was 45.03% for all cases. Confirmed cases mortality (28.21%) differed from the suspected cases (54.17%), p-value < 0.001. About four out of five live cases (84.40%) still had neurological disorders to their output.
Conclusion: The study confirmed a growing number of strokes and suggested a prognostic value of the realization of the CT-scan of the brain.

5OS4.2
Enhancing chronic condition care for urban poor: Role of the local health systems
Bhojani U.1, Devadasan N.1, Kolsteren P.2, De Henauw S.3, Criel B.4
1Institute of Public Health, Bengaluru, India; 2Dept. of Food Safety and Food Quality, Ghent University, Ghent, Belgium; 3Dept. of Public Health, Ghent University, Ghent, Belgium; 4Dept. of Public Health, Institute of Tropical Medicine, Antwerp, Belgium.

Introduction: The sheer volume of people living with chronic conditions and having qualitatively different care demands is stretching limits of the already weak health systems in many low- and middle-income countries. Despite commitment for and knowledge about strategies to address chronic conditions, there is little known on how to implement these strategies within resource-constrained local health systems.
Aim: To understand the role of local health systems in enhancing chronic condition care.
Methods: Based on a five-year doctoral research in a poor urban neighbourhood in South India having a mixed health system: (1) a survey of 9299 households to understand illness profile, health-seeking practices, and healthcare expenditures; (2) interviews of 19 health providers and 16 diabetes patients to understand organization of and access to care; and (3) a quasi-experiment involving four intervention and matched control health facilities to evaluate a health service intervention (patient education, use of standard treatment guidelines and generic medications).
Results: 13.8% adults reported chronic conditions, with people in poverty at significantly greater odds of reporting chronic conditions. 80% patients relied on the private sector. 69.6% households spent out-of-pocket for outpatient care and 16% experienced financial catastrophe, doubling the number of people living in poverty within one month in the neighbourhood. Socially defined roles/positions limited women and elderly in managing care. Fragmented health services implied visits to multiple health facilities for a single episode of care. The limited use of medical records and lack of referral systems hindered continuity of care. Poor regulation of the private sector and corruption marked ineffective governance. While the government sector fails to provide adequate care, the private sector strives to maximize profits. Care for the poor is at best seen as charity. The efficacious strategies did not readily translate into better care and health outcomes for diabetes patients. Implementing a positive change requires careful considerations of complex nature of local health systems, of local dynamics and opportunities.
Conclusion: There is need to address the systemic impediments in the local health systems and to integrate social and health care in order to enhance care for chronic conditions.
Identifying strategies to support self-management for type 2 diabetes: A multi-country comparative case study
De Man J.1, Delobelle, P. 4, Van Olmen J.1, Absetz P.2, Daivadanam M.3
1 Institute of tropical medicine Antwerp; 2 Collaborative Care Systems Finland; 3 Uppsala university; 4 Chronic Disease Initiative for Africa, University of Cape Town, Cape Town, South Africa

Introduction: Type two diabetes mellitus (T2DM) is emerging, especially in the global South. Health systems in many countries are failing to address the burden of T2DM. Many of those systems are focused on acute diseases, while T2DM requires a different approach in which self-management is key.

Aim: draw cross-lessons from Sweden, Uganda, and South-Africa about self-management support for T2DM.

Methods: A conceptual framework was built to analyze the health system, the environment, the community, the population and relevant contextual elements per site with respect to self-management. Data were collected from individuals with diabetes or pre-diabetes, community members, and health professionals from an urban township in Cape Town, a rural Ugandan district, and immigrant populations in Stockholm. Data were collected through focus-group discussions, in-depth interviews, and observations. Data were analyzed by thematic analysis. Re-translating these data to the conceptual framework allowed identification of potential strategies and cross-site analysis.

Results: In each site, data revealed a strong capacity of the environment to influence people's behavior through a promotive culture, access to food and external conditions facilitating physical activity. Data suggest that family plays a crucial role in social support and that health services are not sufficiently tailored and lack autonomy-supportiveness. Data from the three sites revealed a weak link among the community platform, the proximal environment and professional health providers. Data from the Ugandan and South-African site revealed a lack of adequate knowledge on self-management among diabetics, but a strong potential for self-management education through the community. Interviewees acknowledged the ability to manage oneself, and expressed openness to learn more about how to do so.

Conclusion: Our study suggests an important role of the proximal environment, the community and the family in self-management support for T2DM. The weak link among these elements calls for better coordination and communication. The data further suggest that more attention should be given to making services more autonomy supportive and better tailored to the individual; and that community interventions may be an appropriate strategy to do this.
Out-of-pocket expenditures for hypertension care in a low-income urban community of Medellin-Colombia
Londoño Agudelo E.1, García Fariñas A.2, Taborda Pérez C.3, Pérez Ospina V.4, Van der Stuyft P.5
1Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium; 2Departamento de Economía de la Salud, Escuela Nacional de Salud Pública, La Habana, Cuba; 3UPSS Santa Cruz, METROSALUD E.S.E., Medellín, Colombia, 4PSICOL -Psicología Ocupacional S.A.S., Medellín, Colombia; 5Department of Public Health. Ghent University and Institute of Tropical Medicine, Ghent and Antwerp, Belgium

Introduction: Hypertension requires long-life care, which may cause economic burden or even lead to catastrophic financial impact on individuals and families.

Aim: To estimate out-of-pocket expenditures (OOPE) for hypertension care and their impact on households’ economy in a low-income urban community in Medellin-Colombia.

Methods: In 2016, using a validated questionnaire, we conducted a survey in the Santa Cruz Commune of Medellin city in 415 randomly selected households with at least one hypertensive member aged 35 years or older. Assuming a linear spending trend along the year, we estimated annual basic households expenditures and hypertension-attributable OOPE. We established households quintiles based on the annual basic expenditure. Catastrophic health expenditure for hypertension care was defined as hypertension-attributable OOPE higher than 10% of the total annual basic household expenditure or higher than 40% of the household non-food expenditure. Results were first calculated in Colombian pesos and then reported in international purchasing power parity dollars (USD PPP).

Results: The average annual basic household expenditure was $2,254 USD PPP (CI 95% 2,087-2,402). The annual average hypertension-attributable OOPE, reported by 309 households (74.5%), was $19.6 USD PPP (CI 95% 16.9-22.4), mainly composed of direct non-medical expenses (64.1%). Payments for transportation and pharmacological treatment were the individual items most frequently reported (80.9%; 55.9%) and they also constituted the highest proportions (52.5%; 25.6%) of hypertension-attributable OOPE. Hypertension-attributable OOPE represented 1.2% (IC95% 1.0-1.5) of the total annual basic household expenditure and 23.4% (IC95% 15.7-33.0) of households’ health expenditure. These proportions were statically different among quintiles (P=0.048; P=0.003) and 3.7 and 2.4 times higher for the lowest quintile compared to the highest quintile, respectively. Six households (1.4% [IC95% 0.3-2.5]) had catastrophic health expenditure, 5 of them were located in the lowest quintile.

Conclusion: Hypertension-attributable OOPE constitute an important component of households health expenditure in this Colombian urban community. The economic burden and the catastrophic health expenditure for hypertension care mainly affect the lowest economic quintiles. A public policy aiming at providing financial protection by mitigating transportation cost to health services and assuring affordable pharmacological treatment is required, especially for the poorest households.
Towards patient-centered engagement in chronic care: A patient-provider perspective in rural Malawi
Angwenyi V.1,2, Aantjes C.3, Bunders-Aelen J.1, Criel B.2
1 Athena Institute - Faculty of Earth and Life Sciences, Vrije Universiteit, Amsterdam, Netherlands; 2 Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium; 3 Health Economics and HIV/AIDS Research Division, University of KwaZulu-Natal, Durban, South Africa

Introduction: Chronically ill patients require extended interactions with health care institutions and support beyond clinic environment, in order to better manage their conditions. The double burden of HIV/AIDS and rise in chronic non-communicable disease (NCDs) in Africa, calls for more responsive health systems that are capable of meeting care demands for patients with long-term conditions. Patient-centered care and patient self-management are critical elements in chronic care, and are advocated as global strategies. Furthermore, patient engagement in care calls for active participation in health decisions, and empowerment with appropriate knowledge, skills and resources to take action. In Africa, there is need for more evidence on how these practices are implemented and integrated in the delivery of chronic care, especially at primary health care level.

Aim: To explore how patients with chronic conditions are engaged in care, facilitators and barriers towards the delivery of patient-centered care in a resource-constrained setting.

Methods: A mixed-methods research conducted in one rural district in Malawi. Data included a survey of 129 patients; interviews with 10 patients, 10 health providers and four patient focus-group discussions; and observations of clinical consultations in four health facilities.

Results: Our preliminary results (analysis to be completed by October 2017) focus on the following themes. Patient active engagement in clinical consultations varied due to: the level of patient preparedness for clinic visits; provider workload and technical competence; communication and information dissemination approaches; patient’s characteristics; and level of caregiver pro-activeness. Initiatives to deliver patient-centered care included offering integrated services (combined diabetes-hypertension clinic) and using clinical guidelines in delivering holistic care (palliative care clinic). However, these efforts focused on secondary level care and were provided for selected conditions. In efforts to extend care at community level, patient support groups and expert-patients (though mainly for HIV), were instrumental in providing self-management education, psychosocial and livelihood support, promoting positive living and healthy lifestyles.

Conclusion: Initiatives towards patient-centered care for chronic conditions in Malawi and other African countries would require a shift in patient-provider engagement, expansions of patient groups and organizations to cater for other chronic conditions, delivery of integrated health services and formulation of inclusive policies.
Human resources for health in Guinea: A baseline study and policy analysis
Remco van de Pas¹, Delphin Kolie², Alexandre Delamou², Wim van Damme¹
¹ Institute of Tropical Medicine, Antwerp. Health Policy Unit
² Centre National de Formation et de Recherche en Santé Rurale de Maferinyah, Ministère de la Santé Guinée

Introduction: In Guinea there has been a decade long underinvestment in the health workforce with limited public recruitment of new cadres¹. Especially maternal and Neonatal health (MNH) services require attention. Currently only 49% of the HRH needed to provide MNH services are met². The main shortage is in the field of midwifery where only 18% of the needs are met. In response to the Ebola outbreak, that had a considerable impact on the workforce, the government has made a plan to relaunch the health system as to make it resilient. It proposed to recruit 6000 staff and increase salaries with 40%³.

Aim: 1. To assess the health personnel situation at national, regional and prefectural levels.
2. To understand the adequacy between health training programs and health labor market demands.

Methods: The health policy triangle was taken as a methodological framework. Policymakers, health managers, school directors and health workers were interviewed at the national, regional and district level. Interviews followed a semi-structured topical guideline. Two rural districts were visited for the study. Quantitative data on health workers recruitment, deployment, profile and education was obtained. Data were transcribed and coded according to a topic list.

Results: 56 actors have been interviewed. There is a maldistribution of health workers being in the capital vis-à-vis deployment in the rural areas. New deployment of health workers, incentivizing conditions, and task-shifting to less skilled cadres should improve retention in rural areas. Limited career perspectives and government decentralization hinder retention. Output of professional and medical graduates have increased steadily over the years, with new private schools having opened in the regions. The labor market only has limited space to absorb this new workforce, leading to a considerable part of the trained health workforce being formally unemployed.

Conclusion: Scaling-up and retaining the workforce in a low-middle income country such as Guinea requires an inter-sectoral coordination and governance mechanism including a range of national and international actors with the aim to increase fiscal space and employ existing health workforce capacity in regions where health needs are urgent.

References:
³ Ministère de la Santé de Guinée. Plan de Relance et de Résilience du système de Santé. 2015
5OS5.2
Lifting of fiscal space restrictions to boost the Health Workforce in the public sector in Sierra Leone and Malawi: What options does WHO’s HRH-action plan provide?
Marielle Bemelmans1,2, Amanda Banda3, Nicolette Jackson4, Benedict Chinsakaso4, Esther Van Adrichem1, Jacob Maikere5, Romy Rehfeld6, Kerstin Akerfeldt7, Nathalie Cartier1, Mit Philips1
1 Médecins Sans Frontières Operational Centre Brussels, Analysis department, Brussels, Belgium.
2 Independent Public Health Consultant.
3 Médecins Sans Frontières Operational Centre Brussels, Analysis department, Johannesburg, South Africa.
4 Médecins Sans Frontières Operational Centre Brussels, Malawi mission, Lilongwe, Malawi.
5 Médecins Sans Frontières Operational Centre Brussels, Sierra Leone mission, Freetown, Sierra Leone.
6 Médecins Sans Frontières Operational Centre Amsterdam, Sierra Leone mission, Freetown, Sierra Leone.
7 Médecins Sans Frontières Operational Centre Brussels, Analysis department, London, UK.

Introduction: Staff shortages in sub-Saharan Africa hamper adequate health service delivery and reaching Universal Health Coverage (UHC)-targets. WHO’s recent Human Resources for Health (HRH)-action plan includes recommendations to increase HRH availability.

Aim: Analysis of two contexts with acute shortfall in HRH, Sierra Leone and Malawi, reviewing relevance, feasibility, effectiveness of recommendations from WHO’s Action plan.

Methods: Interviews with key informants, analysis of policy, programmatic and budget documents was combined with analysis of staff numbers, plans and policies to improve HRH levels in Sierra Leone and Malawi. Findings were compared with proposed WHO’s action plan.

Results: Fiscal space and budget restrictions hamper absorption of graduates in public health sector and financial and technical support to HRH.
- Sierra Leone currently has 9,120 unsalaried workers, 48% of the total health workforce. These ‘volunteers’ often wait 2 to 10 years before recruitment, meanwhile work in public services without official employment status. Without adequate remuneration, informal patient fees increase, reducing access to care.
- Malawi’s emergency HRH program (2004-2010) successfully pooled international and domestic resources to provide salary top-ups and additional HRH recruitment, leading to 53% increase. Afterwards initiatives stalled; HRH-numbers do not keep up with population growth: e.g. 1.99 Medical Doctors per 100,000 inhabitants in 2009 versus 1.79 in 2016.

WHO’s action plan proposes few measures to tackle the current wage bill restrictions. This means continued low and slow absorption of graduates into public. Renewed interest for community health workers and other lay cadres face similar problems: inadequate remuneration, lack of supervision and support, lack of harmonized training packages and job profiles.

Conclusion: While donors are reluctant to fund HRH-remuneration and expect domestic resource mobilisation, wage bill restrictions block necessary pay adjustments and HRH-expansion to fill vacancies. Without significant measures to support (community) health workers in the public sector, adequate service provision and UHC will remain out-of-reach. In WHO’s current HRH-investment strategy concerns remain around recruitment, remuneration and retention of HRH in public sector. Proposed efforts to create additional graduates might instead boost private sector or international brain drain.
Performance of community tracing system of people affected by Tuberculosis during Ebola epidemic in Conakry, Guinea

Nimer Ortuño-Gutiérrez², Gba-Foromo Chérif¹, Francis Loua¹, Hassane Harouna Souleymane¹, Adama Bangoura³, Lansana-Mady Camara⁴

¹ Damien Foundation Guinea, ² Damien Foundation Belgium, ³ National Tuberculosis Program, ⁴ Faculty of Medicine-Gamil Abdel Nasser University, Conakry, Guinea

Introduction: The Ebola epidemic provoked fear and mistrust in the community. As the health system had difficulties to control Ebola epidemic, the health programs like the National Tuberculosis Program (NTP) had to guarantee the continuity of healthcare.


Methods: From January 2014 to December 2016 this cohort study included all people affected by TB under treatment in Conakry that missed at least one appointment at the health facility. Five community health workers (CHW) were selected according to: at least secondary education, being respected by the community, previous collaboration with NTP and availability. Performance was defined as more than 70% known result of traced people affected by TB.

The community tracing system included: 1. Phone calls and domiciliary visits by CHW. 2. Sensitization sessions of people affected by Tuberculosis during waiting time at health facilities. 3. Weekly coordination meetings between health staff and CHW. 4. Financial incentives to health staff and CHW.

Results: Five CHW traced 1843 people under Tuberculosis treatment from 25 health facilities, 572(31%) in 2014, 682(37%) in 2015 and 589(32%) in 2016. 613(33%) were female. The age mean was 32 years (Interquartile range 23-40). 793 (43%) came from Matam District. 1211 (66%) had smear-positive TB. 457 (25%) were HIV positive. 120 (7%) were not contacted by phone (wrong telephone number or no telephone). Tracing results showed that 289(15%) died, 326(18%) did not restarted the treatment and 1228(67%) restarted treatment.

For 1592 (86%) the reasons of absence were: 25(2%) access (affordability for transport and distance to health facility), 570(36%) health staff availability, 49(3%) refusal, 488(26%) social (parties, burials, school and work) and 170 (9%) travel (national and international). Social reasons and health staff availability were two and six times more associated to not restarting treatment compared to the other factors (OR= 2, CI= 1.9 - 3, P=< 0.01 and OR= 6, CI= 4 - 8, P=< 0.01 respectively).

Conclusions: Community tracing in Conakry showed a high performance of tracing people affected by Tuberculosis during Ebola epidemic. Social factors and health staff availability were more associated to the probability to withdraw treatment.
**5OS5.4**

**How to support health worker capacity in fragile context: Case of a coaching strategy in Burundi**

Anne Fromont¹, Dr Marie-Claire Ryanguenabi², Dr Wolfhard Hammer³, Dr Slim Haddad⁴

¹ School of Public Health, Université Libre de Bruxelles, Bruxelles, Belgique
² Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Bujumbura, Burundi
³ External consultant, Usingen, Germany
⁴ Research Unit, UHC Quebec, Quebec, Canada

**Introduction:** The Burundi context negatively affects the capacity of health workers in several ways: poor quality of initial training, migration issue of educated people, supervision style based on control rather than support… In order to improve the quality of care, an *in situ* coaching was provided by a GIZ team in 2014-15. This coaching encompassed the whole staff of 62 health centers.

**Aim:** Our study aimed to assess the impact of such a coaching on explicit types of knowledge depending on the social groups (gender, age, professional role, qualification...).

**Methodology:** We mixed quantitative data on socio-demographic parameters with qualitative and individual responses to 3 open questions about social representations of quality (SRQ). Qualitative data were analysed with Iramuteq©, a textual analysis software. These data were collected before, at mid-time and after the intervention.

**Results:** Of the whole population of health workers, those without any professional qualification represented 50%. The turn-over showed linear correlation with the level of training (χ²=90.2; p<0.000): marginal for workers without any professional qualification, it rose to 47% over 2 years for the higher educated.

The response rate from individual questionnaires was quite stable (66%-69% - about 650 respondents for each collection). In addition to a common and normative level (e.g. the quality of the patient reception), the SRQ were anchored to the level of qualification (but not directly to the positional role).

The more the level of initial training was low, the more the SRQ changed during the intervention. For the workers without any professional qualification, we observed a clear increase of explicit knowledge pointing to a form of professionalization.

**Conclusion:** In this fragile context, conventional mechanisms for developing professional capacity, as the supportive supervision, are dysfunctional. By addressing the whole staff, an *in-situ* coaching involved low-skilled workers who are often excluded from continuous training despite technical and strategical roles (as hygiene, reception…). As they are a community-based group, they are also more stable than other staff. These kind of local support could be an opportunity to develop professional capacities and, in fine, to improve quality of care in a sustainable way despite highly unfavourable conditions.
**Keynote on strategic financing for more resilient health systems**

Bossyns P.¹

¹BTC – Health department, Brussels, Belgium

**Introduction:** Strategic Financing is a conscious strategy to increase the impact of any financing mechanism beyond its obvious impact of increasing financial resources for the system. New financing mechanisms such as results-based financing or health insurance do not have much impact on overall system performance and quality if the other performance bottlenecks are not tackled simultaneously. Financing as such does not automatically impact on other system performance aspects. BTC has a very large and long experience with SF as a tool to overcome the restrictions of simple purchasing mechanisms.

**Aim:** Contribute to developing the concept illustrated through field experiences of Strategic Financing. To set the theoretical framework of the session and introduce the 6 different field experiences in partner countries.

**Methods:** Based on literature review and field experience based on action-research in the field of health system financing and quality improvement, the concept of SF took form as a result of searching for better solutions when confronted with deceiving field results despite huge investments.

**Results:** Strategic Financing (SF) refers to those effects that the financing system has on the performance of the health system as a whole.

Figure 1: Schematic overview of strategic financing

Figure 1 illustrates the definition of SF. The financing conditions influence performance. This influence, in contrast with specific or isolated problem solving, is lasting beyond the particular attention that actors might have for a particular problem. It means that SF will be contributing to the sustainability of system improvements. SF needs to be complemented by an initial particular attention for the specific problems one would like to address beyond filling the financial gap. SF is an important additional tool for developing health systems, but by no means a magic bullet.

The combination of increased financing with conditional payments can make improvements in the system last, because the specific attention for them might disappear, but the payment conditionality’s last. It makes the system more resilient, because the quality changes become structural: the system auto-supports the change.

The introductory presentation will highlight the concept and proposes above scheme as a general cadre for analysis or presentation of particular situations.
Strategic financing to increase system’s performance in Senegal
Ladrière F.¹
¹BTC health project, Kaolack, Senegal

Introduction: In Senegal, fee-paying by disease episode (flat rates) is introduced as a conditionality for health insurance, to stimulate transparency in the system and to influence good-governance practices and to break the commercialisation reflex of health care workers that pushes the system to overconsumption of scarce resources. Respect for the referral system is stimulated by making ‘referral’ a pre-condition for health insurance to reimburse the invoices at hospital level. It obliges the Senegalese health system to think for the first time about introducing urban health centres: People directly accessing hospitals are too expensive for the health insurance.

The introduction of flat fees caused much satisfaction by the patients, that love the predictability of such system. It provided the necessary favourable environment for health insurance because invoices became transparent and refunding predictable and therefore facilitated the contracting of health facilities. The overall result was an increase in the number of patients and more rational prescriptions.

Aim: Illustrate the concept and field application of Strategic Financing. Demonstrate the impact of the conditionality’s in those strategic aspects mentioned above.

Methods: Explorative case study design based on action research alongside the intervention implemented by the Ministry of Health and the Belgian cooperation in the field of health system financing and quality improvement and focus group discussions with community stakeholders.

Results: Health insurance payments linked to conditions like flat fees, referral and financial transparency, had an impact on utilisation rates, patient satisfaction and increased referral rates. Initial deceiving field results despite huge investments from the national partner, were reversed in the intervention areas as a result of strategic financing.

Conclusion: Health insurance isolated from specific measures on the service delivery side cannot function optimally. Only when health insurance simultaneously demands quality improvements from the health services, offer and demand will act in a complementary way.
50S6.3
Strategic financing to increase system’s performance in Niger
Adamou H. 1
1Permanent Secretary, Ministry of Health, Niamey, Niger

Introduction: In Niger, the national introduction of cost recovery schemes at primary and secondary level in 1995 foresaw that the fee-paying system would be based on flat rates and that by law no incentives or salaries (new staff) could be paid with this revenue. Only consumables could be bought with the revenue linked to cost recovery. This system was introduced in contrast with many neighbouring countries where cost-recovery did not have this conscious restrictions. This financing mechanism protected the population against ever increasing fees imposed by a system looking for ever more income for personal gain. Consciously, the Nigerien government did not want to introduce incentives in the system that could cause, also in the long term, financial barriers for patients.

Aim: Illustrate the concept and field application of Strategic Financing. Demonstrate the impact of the conditionality’s.

Methods: Explorative case study design based on 22 years of managing cost recovery at primary and secondary care levels.

Results: Fees did increase over time, at the best followed inflation, but there were no initiatives to cover ever more items to allow government to withdraw from its financial obligation to subsidise the system. Most importantly, as there were no personal incentives allowed, no commercialisation of care could be noticed: there were no built-in reflexes to increase prescriptions of drugs or medical exams. Evolution of fees over time, compared with other countries and between levels of care demonstrate how the Nigerien system protected their population from outrageous financial barriers, independently from the levels of effective financing of the system through public subventions.

In contrast, at the tertiary level in Niger, user fees were not based on flat rates and personal salary top-ups were allowed. Here the financial barriers took enormous proportions as well as the irrational use of scarce resources.

Conclusion: Build-in conditionality’s in cost-recovery schemes can protect the population from catastrophic health expenditure. It illustrates the importance of strategic measures accompanying purchasing financing mechanisms.
Introduction: In Benin, the Performance-based financing mechanism introduced by the MoH and Belgian cooperation foresees that part of the payments are made by a community users platform that aims to defend patient's rights. This gives power and voice to this platform and some financial leverage (the platform is paid by RBF fund for its work). The assumption is that whilst financial viability of health facilities has increased through output-based financing, the human right for health is equally boosted in a structural manner as well as the quality of services. Finally, supporting this platform contributes to the 'renewed health district' as described in the Declaration of Dakar (2013), promoting a multi-actor dynamic and the autonomy of the local communities towards their health.

The experience in Benin in this matter is promising. The performance of the platform in terms of human rights protection will be highlighted.

Aim: Illustrate the concept and field application of Strategic Financing. Demonstrate the impact of community involvement on the resilience of the system.

Methods: Explorative case study design based on action research alongside the intervention implemented by the Ministry of Health and the Belgian cooperation. Focus group discussions complement the field observations.

Results: Patient rights are defended and complaints and/or frustrations of individuals or the community channelled through a local community users platform. RBF mechanisms are strategically and structurally complemented by other institutionalised measures. The project initiative has 2 years to go for the MoH of Benin to take the appropriate measures to institutionalise the approach.

Conclusion: Build-in conditionality’s in RBF schemes can protect the population against misuse and perceived poor quality of the care received. It illustrates the importance of strategic measures accompanying purchasing financing mechanisms.
Strategic financing to increase system’s performance in Uganda

Byakika S.¹
¹Director of Planning, Ministry of Health, Kampala, Uganda

Introduction: In Uganda, the RBF initiative at the private-not-for-profit (PNFP) health facilities allows only salary top-ups for staff exclusively based on qualitative indicators, with the underlying hypothesis to avoid falsification of quantitative indicators. On top, quantitative indicators to finance the system through more classical RBF mechanisms are modulated by certain aspects of quality of care (proper use of registers, statistics, respect of clinical protocols, use of partograms). Salary top-ups cannot be at the expense of the functioning of the facilities because the financing lines are separate. These preconditions were introduced because of the observations in neighbouring countries where quantitative indicators for RBF financing are seriously overestimated for personal gain and where salary top-ups are made at the expense of the running costs budget of the facilities. This phenomenon was also observed in invoices established after the introduction of free health care in certain settings. Invoices were exaggerated to compensate for personal loss of for late payment of invoices. Although all these aspects evidently are not magic bullets to fight inefficiencies, they at least do not stimulate them and at least marginally contribute to the well-functioning of the system. Their effect is probably boosted when in parallel, specific attention is given to quality issues and building competences.

Aim: Illustrate the concept and field application of Strategic Financing. Demonstrate the impact of community involvement on the resilience of the system.

Methods: Explorative case study design based on action research alongside the intervention implemented by the Ministry of Health and the Belgian cooperation.

Results: Financial viability in the targeted PNFP facilities improved and even allowed diminishing fees for patients, whilst modest salary top-ups became possible through separate purchasing of quality indicators. The focus on qualitative conditionality’s for payment shifts the attention from quantitative towards qualitative indicators and obliges health personnel to focus on the quality of care rather than on (falsifying) quantitative indicators.

Conclusion: Build-in conditionality’s in RBF schemes can protect against gaming the system, a phenomenon often observed in other RBF settings.
Strategic financing to increase system’s performance in Burundi
Basenya O.¹
¹Ministry of Health, Bujumbura, Burundi

**Introduction:** In Burundi, at Ministry of Health level, an original initiative to finance the ministry’s recurrent costs was conducted. A results-based financing mechanism (output-based) was used to support the different directions at the Ministry. Directions and divisions within the Ministry were asked to define themselves their mandate and performance indicators, which were discussed with permanent secretary and Belgian cooperation. Once finalised, these indicators were continuously monitored and determined the level of financing the directions were receiving in exchange for performance. Although the indicators were not entirely accurate, objective or replicable, the incentive of having resources to work properly inspired most of the directions to increase their performance.

The financing mechanism was an opportunity to determine and to respect performance in a participative manner. The gross majority of personnel was enthusiastic about the initiative. Performance indicators evolved favourably.

**Aim:** Illustrate the concept and field application of Strategic Financing. Demonstrate the impact of staff involvement on the organisational performance, in this case a Ministry of Health.

**Methods:** Explorative case study design based on action research alongside the intervention implemented by the Ministry of Health and the Belgian cooperation.

**Results:** Probably the most important result was the fact that different directions for the first time translated their ‘paper mandate’ into operational terms. Performance indicators linked to the defined tasks evolved favourably. Especially lower-rank staff showed increased motivation.

**Conclusion:** RBF can be a financing tool to boost motivation when used at organisational level. It is not so much the objective quantitative indicators but rather the feeling of the staff to participate in its own performance indicators and to be given the means to perform that enhanced their enthusiasm. It also showed an interesting tool to estimate the running costs of a Ministry.
Strategic financing to increase system’s performance in DRC

Iyeti A.¹
¹Director of Research and Planning a.i., Ministry of Health, Kinshasa, DRC

Introduction: In the Ministry of Public Health (MoPH) in DRC, the Direction of Research and Planning was financially and technically supported during more than 10 years by the Belgian cooperation. In principle, the Belgian cooperation supported activities embedded in the Direction’s mission statement and as figured in its annual plan. No specific project activities were financed.

This approach inspired the MoPH to instore the principle of bottom up “unique plan financing” when the new decentralised provincial health authorities were created. The provincial heads were invited to consolidate yearly plans from health zones upwards, concerted with local development partners. The latter were asked to join efforts in financing the activities pertaining to the plan and not to demand additional, typically project-inspired activities. The joined effort between donors was subsequently translated into a single unique contract between the provincial authority and the donor community, represented by one mandated donor that signed.

The basket fund was virtual because funds remained linked to a specific donor and were executed according to the specific donor rules. Albeit, having in each province one donor that represents the remaining ones in signing the unique contract did create better transparency and predictability for the provincial health authorities and created complementary action and synergies between donors.

The financing mechanism was an opportunity to create efficiency, transparency and synergies.

Aim: Illustrate the concept and field application of Strategic Financing. Demonstrate the impact of a ‘unique contract approach’ as a performant tool for donor coordination and bottom-up planning.

Methods: Explorative case study design based on action research alongside the intervention implemented by the Ministry of Health and the Belgian cooperation.

Results: Although funds are kept donor specific, the approach resulted in a strongly coordinated financing mechanism around 1 unique provincial plan. Coordination between development partners organisations such as EU and WB with smaller agents like BTC and even NGO’s around one plan are illustrated.

Conclusion: In absence of a real basket fund and despite insufficient national and regional leadership and a generally weakly organised system and individualised donor proliferation, a ‘unique contract approach’ can be a powerful tool for donor and funding coordination.
Using Causal Loop Analysis in a theory-based evaluation of performance-based financing: The case of Uganda
Renmans D\textsuperscript{1,2}, Holvoet N\textsuperscript{1}, Criel B\textsuperscript{2}
\textsuperscript{1}Institute of Development Policy and Management, University of Antwerp, Belgium; \textsuperscript{2}Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium

Introduction: Performance-based financing (PBF) is omnipresent in African health systems. Yet its results are mixed and the how and why of these results are still unknown. Although qualitative research methods and mixed methods approaches are increasingly being used to investigate these mechanisms, this kind of research still lacks structure in the form of theoretical underpinnings.

Aim: In this presentation we aim to showcase how causal loop analysis can be used for theory-based evaluations of performance-based financing projects and help discover the mechanisms that lead to observed results.

Methods: Causal loop analysis is a systems thinking tool that allows to qualitatively analyse interactions, feedback loops and system dynamics. By graphically depicting the relationships between the different ‘variables’, resources and outcomes, it facilitates the visual analysis of the interlinkages and bottlenecks. We combined this systems tool with some of the principles of realist evaluation, \textit{inter alia} the concepts of ‘abstraction’, ‘reusable conceptual platforms’, and the ‘trust-doubt ratio’. Based on an extensive review of the literature we constructed a causal loop diagram, that functions as the initial theory, i.e. hypothesis, of a theory-based evaluation (TBE) of a PBF scheme in Uganda. We then used semi-structured interviews and surveys to investigate some of the mechanism (i.e. on health workers’ perceptions) which the causal loop diagram showed to be essential.

Results: The literature review resulted in a causal loop diagram depicting the different mechanisms that link the elements of the performance-based financing scheme to the expected results. The impact of PBF on the way health workers perceive their working environment is especially important, hence became the focus of our research. Results will be known by the time of the conference.

Conclusion: The causal loop analysis/diagram is a useful tool to discover essential feedback loops, vicious and virtuous circles, and possible bottlenecks. It helps to create a program theory that is ideal to function as hypothesis for a TBE.
Practitioners vs. researchers? Challenges and opportunities of engaging actors across silos in knowledge production processes on PBF
Antony M.1, Bertone M.P.1
1AEDES Consulting, Brussels, Belgium

Introduction: Producing and disseminating knowledge across the different knowledge silos, i.e. researchers, practitioners/implementers and decision-makers, is one of the key challenges to strengthening health systems and improving the effectiveness of health programs and projects. In the field of PBF, experts and researchers have been actively trying to address this issue from the beginning through the creation of the PBF Community of Practice and related activities. Despite these efforts, there often remains a disconnect between the research produced, in terms of its theoretical focus but also the timing and modality of its dissemination (e.g., through slow peer-reviewed publication processes) and the operational needs of those in the field, both implementers and policy-makers.

Aim & Methods: In this presentation, we describe our experience in Benin. Faced with the need to modify PBF verification processes, decision-makers turned to the implementing agency (with which the authors are involved) to provide rigorous and contextualized information on which to base reforms. To this end, we reanalysed available data to produce evidence highlighting key issues and pointing to recommendations, and we then reengaged with the Ministry of Health and donors with the aim of improving verification and making the PBF scheme more effective and sustainable in the long term. Furthermore, our work led to a broader participative discussion using a new tool, The Collectivity, to engage with experts beyond Benin on a strategic reflection on the operational modalities of PBF verification.

Results & Conclusion: Our experience highlights the methodological and practical challenges of carrying out action-research embedded into the project implementation and documentation processes, from the perspective of “implementers-turned-researchers”. It also stresses the opportunities that this process entails, both in terms of breaking down silos of knowledge production, dissemination and use to provide relevant and contextualized guidance on operational implementation issues, often overlooked by pure researchers, but also in terms of contributing theoretical insights which strengthen the general theory of change.
5OS7.3
Combining semantic discourse and social network analyses with qualitative data to explore the contribution of the PBF Community of Practice to policy diffusion in Africa
Gautier L.1,2,3, Guérin l.1, De Allegri M.4, Ridde V.1,2
1Department of social and preventive medicine, University of Montreal, Montreal, Canada; 2Public Health Research Institute, University of Montreal, Montreal, Canada; 3CESSMA, Paris-Diderot University, Paris, France; 4Institute of Public Health, Heidelberg University, Heidelberg, Germany

Introduction: The performance-based financing (PBF) policy has recently spread in many African countries. The PBF Community of Practice (CoP) was created in 2010 for developing an online platform that would facilitate PBF knowledge exchange, and for building a network of PBF experts, particularly in Africa.

Aim: This study explores the ways in which the CoP contributes to PBF diffusion among African experts. We document the CoP’s participation to diffusion mechanisms, i.e. policy framing, emulation (e.g., developing a transnational sense of community), and learning (e.g., sharing knowledge about PBF across different countries).

Methods: We apply a mixed methods convergent design. We perform a semantic discourse analysis of the CoP’s documentation, including 354 online forum threads and 51 blog posts. We also run social network analyses (SNA) of CoP’s authors (n=256) of online posts. We confront these quantitative results to thematic analysis of qualitative interviews with selected CoP members (N=15) and observation’s notes.

Results: from the semantic discourse analysis prove helpful to understand how PBF is framed by active CoP members, what strategies are implemented to spark a sense of community, and what learning activities are developed to foster policy diffusion. Findings from SNA provide details about active members’ profile, which enables to nuance findings from the discourse analysis: the promoted Africa-driven community does not exactly match the network’s structure. Qualitative insights allow for even deeper mitigation of results.

Conclusion: Bringing the different sets of findings together enables to provide nuanced accounts of each diffusion mechanism. Limits of this approach include the difficulty of drawing causal patterns: the CoP not being the only PBF network active on the continent, its effective contribution to policy diffusion is difficult to isolate from other PBF networks’ actions.

5OS7.4
Understanding the complex motivational mechanisms and consequences of PBF - A self-determination theory-based mixed methods approach
Lohmann J1, Houlfort N2, De Allegri M1
1Institute of Public Health, Heidelberg University, Germany
2Département de Psychologie, Université du Québec à Montréal, Canada

Introduction. Performance-based financing (PBF) is expected to improve healthcare delivery by motivating health workers to enhance their performance. However, both the exact motivational mechanisms through which PBF is assumed to produce changes in performance and potential motivational side effects such as a crowding out of intrinsic motivation are poorly understood to date.

Aim. Our research aims to develop such a better understanding of the motivational mechanisms of PBF. We will present our research approach towards this aim, which we have so far applied in Malawi, Burkina Faso, the Republic of the Congo, and Cameroon.

Methods. Our exploration of the motivational mechanisms of PBF is based on a multidimensional conceptualization of motivation, theoretically grounded in Self-Determination Theory (SDT). Applying SDT to PBF allowed us to develop detailed hypotheses regarding the motivational processes and consequences associated with different PBF elements. For instance, based on SDT, we predict that PBF might both crowd out and crow in intrinsic motivation, depending on how health workers experience the specific intervention design, implementation, and changes effected by PBF. We investigated motivational impact and mechanisms with a mixed methods research approach, which we will present using examples from Malawi and Burkina Faso. At the heart of the quantitative component was an SDT-based psychometric scale to measure motivation which we specifically developed for the purpose. Applied as part of a structured health worker survey in a controlled before-and-after design, we used it to estimate the impact of PBF on motivation as well as the role of diverse factors in producing this impact. In-depth interviews with health workers in intervention facilities allowed us to triangulate quantitative findings, and to explore and understand different pathways, mechanisms, and moderating and mediating factors involved in producing or inhibiting changes in motivation.

Conclusion. Our theory-based mixed methods approach allowed us to develop a more profound and articulated understanding of how PBF affects health workers’ motivation.
**5OS7.5**

**PBF in Benin: Lack of ownership, capitalisation of experience, and sustainability**

Paul E.¹

¹Dept. of Political Economics and Health Economics, University of Liège, Liège, Belgium

**Introduction:** In Benin, performance-based financing (PBF) was launched in 2012 with support from the World Bank in eight districts. BTC followed suit with another approach in five districts. PBF was scaled up in the remaining districts in 2015, with support from Gavi and the Global Fund. However, most donor funding are ending in 2017 and to date, no solution has been found to continue PBF under a domestic approach and with domestic funding after donors have pulled out.

**Aim:** To discuss the major issues that are plaguing PBF in Benin and have contributed to its foreseen failure.

**Methods:** This presentation is the continuation of a process of capitalisation of experiences led in the health sector in Benin since 2012.¹ Mixed methods were used to collect, triangulate and analyse information; including document review, interviews and participative observation.

**Results:** Four main issues are identified: lack of ownership, transparency and integration, which led to lack of institutional and financial sustainability. PBF was from the start conceived as a separate, donor-driven programme; the main PBF approach implemented remained insufficiently integrated in local processes. Moreover, PBF implementation was insufficiently documented and analysed, which prevented from taking appropriate measures to adapt the approach and demonstrate its effectiveness and efficiency. A number of political and institutional factors also prevented PBF from being owned by a sufficiently wide range of domestic stakeholders, including influence of donors, restricted governance and excessive power of the World Bank’s project implementation unit. This resulted in a lack of sustainability – inappropriate institutional design and inability to maintain financing after cessation of donors’ programme – and ultimately, foreseen stoppage of PBF.

**Conclusion:** Ownership, evidence-based adaptation of its approach, as well as integration of PBF into local health systems, are necessary conditions to ensure sustainability.

**Reference:**


**5OS7.6**

**Looking a gift horse in the mouth: When PBF subsidies eventually demotivate, the case of Senegal**

Bodson O.¹, Fecher F.¹, Paul E.¹

¹Political Economy and Health Economy Dept., Faculty of Social Sciences, University of Liege, Belgium

**Introduction:** Performance-based financing (PBF) was introduced in Senegal in 2012 as a pilot programme in two regions, and was rolled out to four other regions in 2014. PBF rewards performance through financial bonuses paid to staff and investment budgets for facilities, upon verification of quantitative indicators and a qualitative checklist. PBF incentives are hypothesized to play an important role in motivating staff and improving performance at facility level. However, more research is needed so as to better understand the way through which PBF incentives exactly bring about positive workforce behavioural change.

**Aim:** To explore the effects of distribution and utilization of performance premiums to staff and facilities on workforce behavioural change.

**Methods:** Our study rests on a mixed methods approach. Information was collected through semi-structured interviews with key informants and a review of administrative documents in a sample of facilities. The interview guide was established based on a literature survey on PBF effects on staff behavioural changes and a review of health structures’ expenditure records.

**Results:** Overall, staff positively welcomes financial rewards to individuals and facilities. However, PBF subsidies also appear to cause frustration to a certain extent. Staff criticizes the way performance payments are distributed to individuals and used at facility level. Dissatisfaction stems from irregularity of payment; perception of unfairness in incentives distribution among staff, as well as due to low payment compared to increased workload to achieve performance objectives; perception of unjustified equipment purchase decisions, often made unilaterally.

**Conclusion:** Our findings suggest that the positive link between staff and infrastructure bonuses and staff behaviour change is not straightforward, as financial bonuses also cause dissatisfaction and frustration. Thus the expected incentivizing effect of PBF could actually be reduced. Therefore, further attention should be aid to the distribution and utilisation of incentives beyond the incentives as such, so as to ensure a coherent incentive strategy.
5OS7.7
Performed-Based Financing in Mali: Can it be called emergence?
Coulibaly A.1, Touré L.2, Ridde V.3,4
1Faculty of Medicine and Odontostomatology, Dept. of Public Health and Specialties, Bamako (Mali)
2Miseli, Bamako, Mali
3Department of social and preventive medicine, University of Montreal, Montreal, Canada
4Public Health Research Institute, University of Montreal, Montreal, Canada

Introduction: Several initiatives have been developed in Mali to improve maternal and child health indicators. Some of these are particularly focused on the performance of health personnel. This is the case of performance-based financing (PBF) which was tested through two pilot projects implemented between 2012 and 2017 in three and later 10 health districts of the Koulikoro region (central Mali). After a long and complex process, the PBF approach was adopted as a “strategy” in the National Ten-Year Plan for Health and Social Development (2014-2023).

Aim: How PBF has been built as a “health approach”? Can it be spoken about “emergence of PBF” in Mali after the implementation of two projects? This piece of work aims to answer to these questions.

Methods: The methodological approach is based on semi-structured interviews. The survey targeted the actors who played a major role in the implementation of this process. A total of 40 interviews were conducted between February and October 2016.

Results: Analysis of the collected data shows that there has been no emergence of the PBF in Mali due to a series of constraints: the absence of a PBF public policy, low Ministry of Health leadership, low visibility, short implementation time of the two PBF projects (14 months for the first project and 8 months for the second one), few political entrepreneurs, and strong scepticism among health staff.

Conclusion: More widely, this research questions the sustainability of development initiatives in Africa, which are often based on a more political than technical agenda.

5OS7.8
The unintended consequences of performance-based financing in Burkina Faso
Anne-Marie Turcotte-Tremblay1, Idriss Ali Gali Gali, Manuela De Allegri2, Valéry Ridde1
1University of Montreal Public Health Research Institute, Montréal, Canada; 2Association Action Gouvernance Intégration Renforcement, Ouagadougou, Burkina Faso; 3Institute of Public Health, Heidelberg University, Heidelberg, Germany

Introduction: The government of Burkina Faso implemented performance-based financing (PBF) to improve the quality and quantity of healthcare services. As is often the case in research and evaluation, little attention has been given to studying the unintended consequences of PBF, despite concerns raised by some global health actors.

Aim: The objective of this study was to document the unintended consequences of PBF in Burkina Faso.

Methods: Guided by the diffusion of innovations theory, we conducted a multiple case study. The cases were the catchment areas of nine healthcare facilities in Burkina Faso. Data were collected using non-participant observation, 103 semi-structured interviews, and informal discussions. Participants included a wide range of stakeholders, including healthcare providers, PBF verifiers and service users. We coded the data using QDA Miner and conducted thematic analysis.

Results: PBF led to unintended consequences such as the arbitrary and retrospective filling of reports, staging before verifications and teaching students how to falsify registries during internships. There was some tension regarding the notion of autonomy due to rigid intervention guidelines. One desirable consequence was that PBF reduced the sale of medication without prescriptions from healthcare workers. During the community verifications, PBF investigators were dissatisfied with their compensation and falsified verification data due to the difficulty of locating patients in the community. Community verifications also led to a loss of patient confidentiality as well as fears, although some patients were pleased to share their views on healthcare services.

Conclusion: The diffusion of innovations theory was useful to assess unintended consequences that go beyond the targeted objectives of the intervention. Greater attention should be paid to unintended consequences to inform effective implementation and refine future interventions.
The place of social health assistance in universal health care policies

Bart Criel
Equity and Health Unit, Public Health Department, Institute of Tropical Medicine, Antwerp, Belgium

Introduction: Progressing towards Universal Health Coverage (UHC) implies two broad domains of action. Firstly, strengthening of health systems, and secondly, development of effective systems of Social Protection in Health (SPH). In the latter, there is an important place for Social Health Assistance (SHA), certainly in low- and middle-income countries where a substantial proportion of the population is unable to engage into contributory systems. Specific arrangements need therefore to be designed to include “destitute” / “indigent” populations.

Aim: To situate the place of Social Health Assistance (SHA) in comprehensive SPH policies, and argue the need for transformative designs that aim to enhance people’s individual agency and to address the structural causes of poverty and social exclusion.

Methods: On the basis of policy documents established by (amongst others) the International Labour Organisation (ILO), scientific literature in the domain of SPH, and own research, propose a framework for the design, implementation and evaluation of SHA.

Results: Conventionally, three central functions are distinguished in social protection policies: 1. Provision of social protection (e.g. provision of benefits to the poorest), 2. Prevention of risks (e.g. health insurance); and 3. Promotion of potential and opportunities (e.g. microfinancing). More recently, a cross-cutting dimension has been proposed to these three functions: i.e. the transformative character of social protection arrangements (1). Transformation pertains to the potential of programs to alter the social and institutional context so as to counteract exclusion and deprivation of the right to health and health care.

Conclusion: SHA should attempt to go beyond the mere provision of benefits, and adopt the ambition to be transformative. If SHA is not transformative, it will not be social.

Reference:
Social protection for the worst off in Burkina Faso: HAT does the Universal Health Insurance offer?
Kadidiatou Kadio 1,3, Christian Dagenais2, Valery Ridde3,4
1 Institut de Recherche en Science de la Santé, Ouagadougou, Burkina Faso; and Doctoral program in Applied Human Sciences (SHA), University of Montréal
2 Department of Psychology, University of Montréal Canada
3 Public Health Research Institute (IRSPUM), University of Montréal Canada
4 School of Public Health (ESPUM) University of Montréal, Canada

Introduction: In 2015, the government of Burkina Faso passed a bill on Universal Health Insurance (Assurance Maladie Universelle in French) with the aim to expand social health protection to its entire population.
Aim: Analyse the potential of this bill in ensuring social health protection for the worst off, and investigate the rationale underlying this important strategic development.
Methods: We analysed existing policy documents and conducted 10 semi-structured interviews with key-informants involved in establishing the Universal Health Insurance law.
Results: The Universal Health Insurance law in Burkina Faso is guided by four key values and principles: national solidarity, equity, the central responsibility of the State in ensuring social protection to its citizens, and democratic management. Four strategic options were adopted in the law: 1) creation of a single scheme covering the entire population, including the worst-off; 2) entitling all citizens to access a same health service package through a third-party payer system; 3) organising people’s financial contribution to this scheme according to their ability to pay (hence the State paying for the contributions of the destitute and the other sub-populations exempted from contributions) and entitling all people to use health services according to their need; 4) putting in place one single management structure. A number of challenges were identified in the implementation process of the Universal Health Insurance policy. They pertain more specifically to the funding of the implementation of the law, and to guaranteeing proper governance and quality of health services.
Conclusion: The Universal Health Insurance law in Burkina Faso has the ambition to include the worst-off and explicitly stipulates that the State bears the duty to finance their contributions to the Universal Health Insurance scheme.
**5OS9.1**
The politics of implementation: An exploration of local dynamics shaping health worker incentives and service delivery in three districts of Sierra Leone
Bertone M.P.1, Witter S.1
1ReBUILD & Institute for Global Health and Development, Queen Margaret University, Edinburgh, UK

**Introduction:** To improve health outcomes there is a need not only to assess the effectiveness of interventions and their translation into policies, but also to focus on implementation processes and the factors influencing them, including political factors, which are often overlooked.

**Aim:** The starting point of this study is the finding of differences in the remuneration of primary health workers, as well as in the activities they carry out -and therefore in how services are delivered- between three districts in Sierra Leone. The differences are not driven by national policies or local health priorities. To investigate this result, we examine the dynamics of policy implementation at district level.

**Methods:** Our mixed-methods research draws mostly from 18 district-level key informant interviews, but also includes 39 interviews with health workers, a survey and a 8-week logbook recording incomes and activities of 266 health workers. Data from key informants are organised using a political economy framework focusing on the interaction between structure (context, historical legacies, institutions) and agency (actors, agendas, power).

**Results:** It appears that official policies are re-shaped both by implementation challenges and by informal practices emerging at local level as the result of the district-level dynamics and negotiations between District Health Management Teams (DHMTs) and NGOs. Emerging informal practices which influence HWs remunerations and activities take the form of selective supervision, provision of drugs and materials, reporting requirements, as well as salary supplemetations and per diems paid to health workers. They aim to ensure a better fit between the actors’ agendas and priorities, services delivered and HWs incentives. Importantly, the negotiations, which shape such practices are marked by a substantial asymmetry of power between DHMTs and NGOs.

**Conclusions:** Our findings reveal the influence of NGOs on the organization of service delivery and on the HW incentive package. They highlight the need to empower DHMTs to limit the discrepancy between policies defined at central level and practices in the districts and to adapt them to local needs. For Sierra Leone, these findings are more relevant than ever as new actors entered the stage at district level, during and after the Ebola epidemic.

**5OS9.2**
Enhanced horizontal and public accountability within the local health system: Effects of the preparation for Universal Health Coverage in Senegal
Bossyns, P.1
1Belgian Technical Cooperation, Brussels, Belgium

**Introduction:** A necessary prerequisite for a successful introduction of any national health insurance scheme is that modes of governance (and concomitant accountability relationships) shift with the new situation. In 2013, the Ministry of Health, with the support of the Presidency, decided to launch the initiative to prepare for universal health coverage for the entire population. The scheme covers the provision of basic essential health services, also for the informal sector and the poor.

**Aim:** To explore shifts in modes of governance alongside the introduction of a national health insurance scheme (and its financial implementation instruments)

**Methods:** Explorative case study design based on action research alongside the intervention implemented by the Ministry of Health and the Belgian cooperation (PAODES - Programme d’Appui à l’Offre et à la Demande en Santé) from 2012 to 2017.

**Results:** (1) The introduction of a fee per disease episode system was introduced at health post and health centre levels. The introduction of a flat rate enhanced the predictability of the fees for the population. Through (the effect of) greater transparency, accountability between users and the providers / health centre was enhanced and informal, under the counter payments could be better resisted by service users. (2) The creation of health insurance units at departmental level was accompanied by the creation of the role of an ombudsman-doctor responsible for auditing quality of care in the facilities and the handling of service user complaints. His role was reinforced by a sanctioning mechanism, whereby he could refuse reimbursement in case of non-compliance. These insurance units are headed by an executive board with political representation from the mayor and village representatives. This provides an additional (indirect) channel for the population to exercise voice and enforce accountability from the local health system.

**Conclusion:** The first steps (or the preparation) of the universal health coverage scheme, and the implementation of institutional, financial and administrative instruments in its wake, is producing effects of enhanced horizontal and public accountability within the local health system.
Complex adaptive health system governance: Sierra Leone case study of epidemic response
Mayhew, S. ¹ Hanefeld J. ¹, Balabanova D. ¹
¹Department of Global Health Development, Faculty of Public Health, London School of Hygiene & Tropical Medicine, UK

Introduction: The response to the Ebola epidemic has challenged the dominant paradigm of gradual health systems strengthening, led by national governments, with financial and technical support by international actors. It has posed difficult questions about what kind of responses are helpful in situations when sudden shocks appear to overwhelm already fragile health systems and deplete limited resources. There is an increasing effort to link the response to epidemics and shocks to health system strengthening, but this is still understood in a narrow manner, as ‘building disaster management capacity’ rather than any explicit commitment to building resilient health systems. Moreover the connections (and tensions) between international, national and local actors and responses has been little explored.

Aim: To investigate the nature of international, national and local responses to the Ebola epidemic in Sierra Leone and identify how emergency response mechanisms can be utilised to build resilient health systems and what lessons can be learned for other settings.

Methods: Our overarching approach is multidisciplinary and we combine ethnographic approaches with health systems and policy research techniques. Specific methods include scoping reviews, policy document analysis, key informant interviews, network analysis, ethnographic fieldwork and causal pathway tracing.

Results: Preliminary findings suggest local responses to the Ebola epidemic were being enacted before the international response occurred and before standardised national processes were established. The parallel non-health governance systems of local Paramount Chiefs were critical to implementing effective local responses but the actions of district health management teams, and individuals within them, were also pivotal in helping communities respond quickly. Conversely, there are examples of where the formal health structures were inadequately prepared or motivated and local governance structures took over to quarantine villages and prevent spread. There was widespread disconnect between international/national militarised action and local efforts, with damage to the health system ensuing.

Conclusion: The complexity of governing epidemic responses is compounded by the actions of global actors who control macro-governance structures with little understanding of the complex local governance systems on the ground. Future epidemic responses must find ways to quickly establish connections with local governance structures in order to be effective.
Developing integrated social and health care centres in Brussels: Are the questions and answers generizable?
Heymans I, Moulin M, de Bethune X, Vignes M.  
1 Doctors of the World, Belgium; 2 Cridis UCL, Louvain-La-Neuve, Belgium; 3 Metrolab, Brussels, Belgium

Introduction: In a context of fragmentation of health and social services in Brussels, Belgium, the population is facing a growing complexity of problems and – in many cases – reduced access to care. Doctors of the World (DoW) and partners launched a pilot project creating 2 centres where social services, mental health, preventive and first line curative primary care are offered in a same location. Besides the inhabitants, also the access of discriminated groups in the neighbourhood is targeted with proactive strategies.

Aim: Through the development of these centres research opportunities are created on “how they function” and “with which structural and organizational conditionalities”, and finally on “the possible benefits of this integrated approach”.

Methods: Both pilot projects are in their set-up phase. One is composed by 5 pre-existing services joining a same facility in 2019. All are private non-profit organisations, having official recognition and public financing. A participatory integration process has been agreed and has started. In the other, a PHC team starts up in October 2017 and will develop a community diagnosis to define the need of complementary services.

Results: During the planning of both initiatives, the same questions are emerging: Which type of services and activities can/should be integrated in the same location? What type of interdisciplinarity and how to develop and support it? How to define the coverage area? The expected/intended population of responsibility? Which accessibility problems we can expect for marginalized groups and how to overcome them? How to deal with the complex mix of different publics (elderly, families, drug users, migrants, homeless people, …)? Facilitators and difficulties in the collaboration with external partners? Which governance and business model? How to encourage participation of users and the community? Etc.

Conclusion: Emerging questions are multiple. Our insights and doubts are probably comparable to those in other initiatives in middle and high income countries. We hope the discussion will lead to possible answer paths that might also be useful for other actors and contexts.
5OS10.2
Integration of medical and psychosocial care for stigmatized and vulnerable groups into primary health services in Guinea
Sow.A 1

1 Medical Director of Fraternité Médicale Guinée

Introduction: Care for specific target groups is frequently organized in specialized services. We describe and discuss the care and psychosocial support offered to specific target groups – in this case sex workers (SW) and men who have sex with men (MSM) – in polyvalent health centers in Guinea. Also here comprehensive care is an essential approach.

In Guinea, prevalence of HIV in these groups is 16% (SW) and 50% (MSM) respectively. In the given context, the services unfortunately do not have adequate specific structures to welcome these population groups, to listen to them, and to offer them adapted attention, in line with their vulnerability. Moreover, they are highly stigmatized, including by part of the health professionals, which is enhancing the problem of poor follow-up.

Aim: In the aim to develop an adequate response to this challenge, specific areas have been habilitated in key health centers, to ensure access to adequate, acceptable and comprehensive services they need.

Method: The study is developed in the associative health center of the NGO ‘Fraternité Médicale Guinée’. The mentioned key populations are residents in the area, and benefit from medical care, STI / HIV / AIDS counseling, testing and treatment, and access to condoms. This is combined with social and psychological support. Two approaches are being combined: the mobile clinic and the adapted service.

Results: In 2016, 1353 PSW and 101 MSM visited the health center or mobile clinic. Besides the medical follow-up, each PSW has an average of 4 contacts/year for psychosocial support. Based on this information, we discuss the challenges of strengthening the comprehensive and integrated approach that we are putting in place towards these groups. We explain our diverse psychosocial support approaches, strengthening of resilience and the issue of resocialization.

Conclusion: Integrating medical and psychosocial services for key populations in front-line, multi-purpose care facilities is essential and possible. It improves access to care, reduces stigma and promotes resilience and resocialization of vulnerable populations.
Latin American experiences on ‘health and well-being’ – An overview
Mauricio Torres-Tovar
1Public Health Department, Faculty of Medicine, National University of Colombia, Bogota

Introduction: Comprehensive approaches to health and health care do not only exist in ‘western’ approaches to health. Over the last decades, Latin-American public health has been incorporating traditional experiences on health and well-being in their health policy development.

Aim: In this presentation we share concrete experiences from Latin America that use non-classical approaches to recover the original vision focused on good living, discussing their conceptual bases, their practical set-up and achievements, and existing limitations.

Method: We analyze the heterogeneous development of health systems and programs in Latin America, going from the most classical and hegemonic ones – based on the limited concept of ‘health as the absence of infirmity’ – to much less classical and ‘anti-hegemonic’ views, recuperating approaches of the original indigenous peoples, based on the concept of ‘good living’ (buenvivir ~ Sumak Kawsay (Quichua), Sumak Qañana (Aimara)), linked to prospects for autonomy and territorial sovereignty.

Results: In the region, comprehensive health concepts are linked to well-being and promotion of quality of life and health (in experiences promoted in countries such as Brazil and in cities such as Bogotá). These vary from community-based initiatives on primary health care with population based and territorial approaches (as in El Salvador, Cuba and Venezuela), to holistic visions developed by indigenous peoples based on the ‘buen vivir’ (as in experiences in Ecuador and Bolivia) and those with emphasis on autonomy (in regions as Chiapas, Mexico and northern Cauca, Colombia).

Conclusion: Exchanges on the social construction of health and well-being – ‘good living’ – can support knowledge building towards strengthening policies, systems and programs on health and well-being.
Primary care development in El Salvador: A comprehensive strategy towards Health and well-being
Espinoza, E.¹ and Elias M. A.²
¹ Vice-Minister of Health policies, El Salvador. ² Director of Human Resources, Ministry of Health, El Salvador

Introduction: In 2009, the new government of El Salvador started a profound health reform, reorienting the health system towards primary health care, based on family and community health.

Aim: We analyze the concept, implementation and advances of this policy.

Method: Literature review, document review, testimonies.

Results: The reduction of maternal mortality from 56 per 100,000 live births (2009); to 27.4 (2016), one of many achievements, was mainly the result of an elimination of out-of-pocket payment for care, combined with a dramatic decrease of geographical barriers, through the expansion of the health network and the setup of community health teams in the poorest municipalities, especially in rural areas. Also networking of services and community organizations in health (National Health Forum) was strengthened, and a well performing information system was developed.

The National Health Policy defines health as a fundamental human right, guaranteeing universal access and health coverage. The health system’s mission is to “ensure the right to health for the entire population” (not only the poorest), meaning that not only diseases are addressed, but also the social determination of health, requiring intersectoral approaches. More than 40 institutions participate in intersectoral policy development, including towards pesticide use, pyrotechnics and mining.

The PHC-based system incorporates following principles: social participation through the National Health Forum, having a significant role in decision-making and policy design. It also functions as a social control mechanism, having an active role in the management committees of the health networks. Moreover, the system continuously promotes health equity, prioritizing public health interventions based on stratification.

Overcoming geographical and economic barriers emerges as one of the main challenges, currently focusing on urban health, with special attention for social violence and its impact on mental health, and teenage pregnancy.

Conclusion: To face these and other challenges, we need the adequate measurement of health inequities, an extension and consolidation of the National Health Forum, the strengthening of community organization for the enforceability of the right to health, and develop a comprehensive approach to the social determination of health, for which a new model is being developed, in balance with the ecosystem.
Rubber stamp templates improve clinical documentation and patient safety: A mixed-methods evaluation in private sector primary healthcare facilities in Kenya

Kleczka B.1,2, Kumar P.1,4, Musiega A.4, Rabut G.4, Njeru M.3, Marx M.2

1Health-E-Net Limited, Nairobi, Kenya; 2Institute of Public Health, University of Heidelberg, Germany; 3Centre for Public Health Research, KEMRI, Nairobi, Kenya; 4Institute of Healthcare Management, Strathmore Business School, Nairobi, Kenya

Introduction: A growing number of urban poor in low and middle-income countries (LMICs) receive primary healthcare (PHC) services through private facilities, staffed by non-physician clinicians (NPCs) yet little is known about the quality of care delivered. The Guideline Adherence in Slums Project in Nairobi, Kenya, pioneers a data-driven low-cost clinical quality improvement (CQI) intervention centring around rubber-stamp templates (RSTs) that incorporate essential elements of clinical practice guidelines (CPGs). Once filled, data in RSTs is extracted using mobile phones and analysed to design targeted trainings.

Aim: The aim of the study was to understand the effectiveness of low cost CQI interventions as trialled under the Guideline Adherence Slum Project in Nairobi.

Methods: This study applies a mixed-methods, sequential design to evaluate the intervention. Phase 1 involved interviews and a focus group discussion with NPCs and facility managers on CQI in private sector facilities in Nairobi’s slums. In phase 2, RSTs, mobile phones and monthly data feedback were introduced in 10 facilities. Effectiveness of RSTs was measured quantitatively through clinical audits before and after the intervention. Acceptance and use of the tools were evaluated through interviews with NPCs and managers.

Results: Among the challenges reported by NPCs were poor access to CPGs and pressure from both patients and management as reasons to deviate from standards. RSTs were seen to give clinical decision support and help standardize care. Clinical documentation scores for three non-communicable diseases improved significantly (36% to 84% for hypertension, 32% to 84% for diabetes and 26% to 54% for chronic respiratory illnesses) after the introduction of RSTs, with early data indicating improvements in rational prescription of antibiotics for urinary tract infections.

Conclusion: RSTs in combination with mobile phones proved to be effective tools for improving documentation of clinical care by NPCs. High quality clinical data is made available at low cost from vulnerable, slum-based populations on aspects of management such as risk factors, commonly prescribed tests and drugs. By reducing the cost and effort of clinical audits, RSTs have the potential to be used for sustainable and data-driven QI interventions in a growing but fragmented private sector in LMIC settings.

Reference:
50S11.2
How can we measure patient safety? A literature review based ‘gold standard’ of patient safety indicators
Nitschke. C.1, Nafula M.2, Brodowski M3, Marx I.4, Kandie C.5, Omogi I.6, Paul-Fariborz F.4, Szecsenyi J.3, Marx M.1
1University of Heidelberg - Institute of Public Health, Heidelberg, Germany; 2Institute of Health Policy, Management and Research (IHPMR), 3Institute for Applied Quality Improvement & Research in Health Care (AQUA), Göttingen, Germany; 4evaplan at the University Hospital, Heidelberg, Germany; Nairobi, Kenya; 5Department of Standards and Regulatory Services, Ministry of Health, Nairobi, Kenya; 6Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Health Programme, Nairobi, Kenya

Introduction: The discipline patient safety has the intention “first do no harm” - as along with every clinical procedure in health care comes a risk for suffering preventable harm, both for patients and medical staff. By recognizing errors, reporting, quantifying them, analyzing feedback and preventing further errors to occur through improvements, the risk of unnecessary harm that is associated with healthcare is tried to be reduced to an acceptable minimum.

Aim: To search for worldwide existing patient safety indicators, to evaluate them and discuss about how patient safety can be measured universally as a base for efficiently applicable patient safety improvement.

Methods: A literature review on patient safety indicators was performed and the found indicators were summarized to a ‘Gold standard’ of different patient safety indicators in awareness of the three measure levels of the Donabedian Model.

Results: Patient safety indicators of the AHRQ, OECD’s HCQI and other indicator sets were adopted to a ‘Gold standard’ of 99 different patient safety indicators, measuring structure, process or outcome. Existing studies on patient safety indicators showed underlining and critical views.

Conclusion: The findings show that there are overlaps, deficiencies and benefits of the existing patient safety indicator sets. The summarized ‘Gold standard’ should be applicable to measure patient safety in a global context as an essential step for improvement.

50S11.3
Framework for quality improvement of health systems in an outbreak setting based on priority intervention areas
Pervilhac C.1, Brugnara L.2, Marx M.3
1Institute of Global Health, University of Geneva, Switzerland; 2Global Health Policy Expert, Ueberlingen, Germany. 3Institute of Public, Health University of Heidelberg, Germany

Introduction: The West Africa Ebola Virus Disease (EBV) Outbreak 2014-15 took countries and the international community by surprise. Health Systems in Guinea, Liberia and Sierra Leone were weak, with low performance and not prepared to cope with the challenge. Quality Improvement mechanism in health are mostly applied in health services or health care, but quality improvement approaches covering the whole scope of Health Systems are rare.

Aim: To propose a framework for Quality Improvement of Health Systems in Outbreak Settings based on the WHO Health Systems Building Blocks and on Priority Intervention Areas identified from the experiences of the EBV Outbreak in West Africa.

Methods: Analysis of data and experiences presented at the “Second International Quality Forum” organized by the University of Heidelberg, University Clinic and partners in Heidelberg in July 2015 and of literature review on Quality Improvement in Health Systems, EBV and outbreak response.

Results: Various Quality Improvement mechanism were applied during the EBV outbreak in West Africa, but not in a systematic way. Priority Intervention Areas for Quality Improvement of Health Systems (PIA-QI) in the context of EBV outbreak were identified. Relevant PIAS-QI were surveillance, basic infrastructure and WASH, patient and staff safety, care management, maintenance of routine services and community ownership. These should systematically be addressed for a better outbreak response. Considering these PIA-QI and the Health System Building Blocks1, a framework for Quality Improvement of Health Systems were proposed.

Conclusion: Outbreaks pose a challenge for Health Systems, even more in countries with limited resources and capacities. To improve the quality of health systems performance in an outbreak context a strategic approach with defined Priority Intervention Areas (PIAs) should be applied before and during the epidemic. PIAs need to be adapted according to the specific outbreak and regional context. Efforts should not only concentrate on health services, but also on other systems building blocks as information and governance.

Reference:
Systemic approach to improve service quality in health facilities – A break-through in 10 health facilities in Kenya

Nafula M., Nitschke C., Brodowski M., Marx I., Kandie C., Omogi I., Paul-Fariborz F., Szecsenyi J.; Marx M.

1 Institute of Health Policy, Management and Research (IHPMR), Nairobi, Kenya; 2 University of Heidelberg - Institute of Public Health, Heidelberg, Germany; 3 Institute for Applied Quality Improvement & Research in Health Care (AQUA), Göttingen, Germany; 4 evaplan at the University Hospital, Heidelberg, Germany; 5 Department of Standards and Regulatory Services, Ministry of Health, Nairobi, Kenya; 6 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Health Programme, Nairobi, Kenya; 7 evaplan at the University Hospital, Heidelberg, Germany; 8 Institute for Applied Quality Improvement & Research in Health Care (AQUA), Göttingen, Germany; 9 University of Heidelberg - Institute of Public Health/evaplan ltd, Ringstrasse 19b, 69115 Heidelberg, Germany

Introduction: This study was conducted within the framework of a project to build the capacity of the newly devolved structures and health facilities on operationalization of the Kenya Quality Model for Health (KQMH) and institutionalization of quality management in Kisumu, Kwale and Vihiga counties.

Aim: To assess the effectiveness of the integrated quality management system developed, based on validated indicators derived from the Kenya Quality Standards and KQMH.

Methods: An integrated QM approach was chosen based on European Practice Assessment (EPA) and modified to the Kenyan context. It relies on a multi-perspective, multifaceted indicator based assessment. The adaptation process made use of a ten step modified RAND/UCLA appropriateness Method to select 303 indicators covering the 6 WHO Health Systems building blocks classified using the Donabedian Model of structure, process, outcome. The indicators were further classified into five domains (Clinical Care, Management, Interface in/out-patient, People and Quality & Safety. To measure the 303 indicators five data collection tools were developed: surveys for patients and staff, a self-assessment, facilitator assessment, a manager interview guide. A longitudinal study design with two assessments was used on 10 facilities (6 hospitals; 4 Health centres) selected out of 36 applications. The assessment process was supported by a specially developed software (VISOTOOL®) that allows detailed feedback to facility staff and benchmarking. Facilities were supported to develop and implement improvement plans to address gaps identified in the first/baseline assessment. Data was summarised using means and SDs. Categorical data was presented as frequency counts and percentages. QA baseline assessment (T1) was carried out, a reassessment (T2) after 1.5 years.

Results: from the first and second assessment after 1.5 years of improvement activities are striking. Marked improvements were found in the domains ‘Clinical Care’ (10.08%; p=0.0108), ‘Management’ (13.10%; p<0.0001), ‘Interface In/out-patients’ (13.87%; p=0.0246), ‘Quality and Safety’ (20.02%; p<0.0001) and in total (14.64%; p<0.0001).

Conclusion: This comprehensive quality improvement approach offers a reflection on the relevance of measurable and evidence-based quality improvement for health system strengthening and has the potential to lay a solid ground for further certification and accreditation.
Is the indicator based approach a reliable and effective strategy to develop a quality assurance program? Lessons from the Benin quality assurance initiative

Dramé ML.¹, Sogbohossou P.¹, Vanheuverzwijn C.¹, Ekambi A.¹, Gyselinck K.¹, Marx M.²

¹Belgium Technical Cooperation, Cotonou, Benin; ²Institute of Public Health, University of Heidelberg, Germany

Introduction: In 2013 Benin elaborated the country health sector quality assurance policy. In 2015, the Benin based Belgium health support program started with a strong component of quality assurance (QA) at both institutional and operational levels. The institutional assistance aims to design an integrated and systemic approach with sustainable progress and results. At the health facility level, activities for a continued QA will be implemented and followed up by the local staff with facilitation of a supervisor. Another very important feature was a baseline assessment, the design of an improvement plan with progress being measured.

Aim: Explain how to set, organize and implement an indicator based QA program in a low income country (LIC) with low quality data and human resource constraints.

Methods: An integrated and systemic QA strategy was designed. This strategy was based on (i) literature review, (ii) interviews and discussions with major stakeholders, (iii) assessment of the existing QA approaches, (iv) inventory of all QA indicators, norms and standards in use in the country, (v) development of five indicator based tools for QA measurement, (vi) selection of QA indicators, domains and dimensions by country experts using RAND/UCLA and Delphi method and (vii) piloting audit in four health facilities (HF) in assessing their QA by local actors with support by a facilitator.

Results: The findings can be summarized as follow: (i) several uncoordinated QA initiatives, (ii) the QA information system was not robust; many QA tools and instruments from various actors were not integrated, (iii) the on-going QA initiatives take in account only one or another dimension like laboratory, infrastructure; (iv) many QA programs do not last after the withdraw of the foreign support; weak ownership by local staff; (v) key results of piloted QA audits: comprehensive baseline; high acceptance by local staff; facilitates prioritization of QA activities.

Conclusion: QA programs need clear and shared definition of the domains and dimensions. It is also crucial to develop robust tools that encompass all the program components and define how improvements will be measured through reliable defined indicators. Pioneering phase is useful before spreading or expanding the program.
Is quality equal to safety? The reflection of patient safety in a Kenyan quality improvement project
Nitschke. C.1, Nafula M.2, Brodowski M3, Marx I.4, Kandie C.5, Omogi I.6, Paul-Fariborz F.4, Szecsenyi J.3, Marx M.1,4
1 University of Heidelberg - Institute of Public Health, Heidelberg, Germany; 2 Institute of Health Policy, Management and Research (IHPMR), 3 Institute for Applied Quality Improvement & Research in Health Care (AQUA), Göttingen, Germany; 4 evaplan at the University Hospital, Heidelberg, Germany; Nairobi, Kenya; 5 Department of Standards and Regulatory Services, Ministry of Health, Nairobi, Kenya; 6 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Health Programme, Nairobi, Kenya

Introduction: In Kenya, several initiatives have tried to improve the quality of care in health facilities, yet data from national surveys indicates that there is still need for consistent efforts to improve structure, processes and outcomes of health care provision. Based on quality indicators of the Kenya Quality Model for Health (KQMH) and of the European Practice Assessment (EPA) an Integrated Quality Management System (IQMS) was developed by evaplan, AQUA and the Institute of Health Policy, Management and Research (IHPMR) to improve maternal and child health, within the framework of a GIZ funded project.

Aim: The current study analyses the patient safety elements reflected in the IQMS quality improvement (QI) approach.

Methods: An analysis on the reflection of patient safety within the IQMS quality improvement approach from Kenya has been performed by matching its 344 quality indicators with a literature review based summarized ‘Gold standard’ of 99 different patient safety indicators.

Results: 149 out of those 344 indicators were considered to be reflecting patient safety by matching 28 of 99 different patient safety indicators. Looking at concrete quality improvement interventions from 10 comparable Kenyan facilities, 8 of the 99 different patient safety indicators were reflected.

Conclusion: The presented results show that patient safety indicators are reflected in QI frameworks to a certain extend. But when it comes to QI implementation efforts rather few activities address patient safety. Thus we conclude that there is a need to attribute more emphasis on patient safety in quality improvement projects.
Introduction: A workshop presenting the European platform of medical equipment in LMICs covering medical equipment donations, appropriate medical equipment, and capacity building of biomedical engineering professionals. Since 2014 the European platform of medical equipment in LMICs has grown to 12 organizations from 6 countries sharing experience and aiming to work together to improve the impact on the common goals of BME capacity building and appropriate donations. In this session the network is presented together with its successes and challenges.

Aim: The aim of this presentation is to create awareness around medical equipment in LMIC, encourage organizations to join the European Platform and fine tune our mandate.

Methods: Short presentation to open the debate amongst the participants.

Results: Successful networks have a common purpose, clear objectives and a non-hierarchical structure. They encourage voluntary participation and the input of resources for the benefit of all members. The generic qualities of a network will be to build collaboration, relationship and trust. Participants will be invited to suggest potential members and ways to increase.

Conclusion: In the complex environment of health and development, each network will have to make its way to successful collaboration. This debate is an opportunity to share experiences.

Reference:
Introduction: Literature describes that up to 80% of medical equipment in many sub-Saharan African countries is donated or funded by foreign sources and that 70-90% of donated equipment is never operationalised. In this presentation new data will be presented and the concerns around medical equipment in LMIC’s will be refined. For most medical equipment there’s no clinical training provided, no spare parts available and few local technicians to carry out maintenance. This presentation deals with the experience of an on-the-job training during a course organized in Bukavu, RD Congo.

Aim: To set the framework (with theoretical concepts and practical experiences) for the session and open the debate among the panelists and the public in order to formulate recommendations.

Methods: The first results of the experience in Bukavu, RD Congo will be presented in order to open the debate amongst the participants.

Results: The result of the workshop will be more awareness of training in maintenance of technicians and users of medical equipment in LMICs.

Conclusion: In the complex environment of health and development, appropriate equipment, is essential and training is vital.

References:
Temple-Bird C et al. How to organize the maintenance of your healthcare technology. ‘How to manage’ series on health care technology guides n°5, St Alban’s, Ziken International (Health Partners International), 2005. Série technique de l’OMS sur les dispositifs médicaux:

Feasibility and perspectives of introducing a GMAO in the Ministry of Health in Benin
Verbeke F.¹
¹Département de Bio-statistique et d'Informatique Médicale, Vrije Universiteit Brussel, Bruxelles, Belgium

Introduction: Context: The Ministry of Health in Benin faces serious challenges in introducing an efficient material resources (assets) management:
1. There is no global and reliable inventory of the assets
2. The existing fragmented data are of little use because they are not standardised
3. Reporting about the functional state of the infrastructure and equipment turns out to be extremely difficult
4. The lack of solid plans for preventive maintenance is the cause of a good number of unavoidable breakdowns of the medical equipment
5. Lack of national equipment procurement plan.

Aim: The aim of this presentation is to create awareness around the introduction of a GMAO.

Methods: A short presentation and review of existing good practice guides GMAO (OMS), of the norms and standards for the building and the equipment of health facilities in Benin, of the NPDS 2009-2018, and an analysis of literature on the use of equipment nomenclature was made, followed by the identification of the needs and challenges through interviews with a large number of interested parties in biomedical maintenance, during a series of field trips in the Pass- Sourou intervention area.

Conclusion: The introduction of a GMAO allows:
1. The application of quantitative standards for medical equipment
2. The use of standardized procedures for preventive maintenance on the national level
3. An effective follow-up of corrective maintenance
4. The planning of investments based on needs

References:
1. Gestion de la maintenance biomédicale, OUEDRAOGO Yacouba, ABIH, UTC, 2016
The strategy of Learning and Research Health Districts (LHRDs) in a health systems strengthening perspective in the Democratic Republic of Congo (DRC): Clarification of the concept of a LRHD and review of similar experiences in Sub Saharan Africa

Michaux G1, Mwembo TA2, Monet F1, Belrhitii Z3, Criel B1
1 Institute of Tropical Medicine, Antwerp, Belgium
2 Public Health School, University of Lubumbashi, Democratic Republic of Congo
3 National Public Health School of Rabat, Morocco

Introduction: The RIPSEC program in Democratic Republic of Congo aims to strengthen the use of national academic expertise to improve health system functioning. Three health districts have been selected to become Learning and Research Health Districts (LRHDs) through a partnership with national public health schools. This strategy implies the progressive development of districts into settings that are functional enough to act as platforms for training of health professionals in district management. Eventually, that are to become terrains for health systems research.

Aim: Clarify the concept of a LRHD, define its potential and limitations, and help in mapping out a strategy for its development in the DRCongo.

Method: Detailed qualitative analysis of four LRHDs developed between 1971 and 2003 in sub-Saharan Africa: one in Congo Brazzaville and one in the DRCongo, and two in Niger. Sources of data were i) the results of a workshop on LHRDs held in Antwerp 2014; ii) in depth interviews conducted in 2015 with a selection of key informants involved in past LHRD experiences; and iii) literature review.

Results: Common features of these LHRD experiences are long-term engagement; key role of the district management team in all aspects of LRHD development; promotion of an attitude of reflexivity and intellectual rigor in the district management team through coaching by senior public health experts; and use of action research. The dissemination of the model was effective in all four cases in terms of systems development. The extent and depth of the action research and the sustainability of the pedagogical approach were however unevenly distributed.

Conclusion: The results of this study contributed to develop and fine tune the strategy of LRHDs in the frame of the RIPSEC program in DRC. The involvement of national public health institutes in LRHDs in the DRC is an asset that can facilitate institutional linkages with Ministry of Health, foster the use of national academic expertise, and enhance sustainability of learning and research nested in the health system.
Introduction: Public health programmes are often adapted and improved during implementation because of the complexity of most interventions, making it difficult to plan, monitor and evaluate. The RIPSEC programme in the DRC aims to transform three health districts (two rural and one urban) into learning and research sites. In order to succeed in this complex endeavour, a mapping is needed of all the desired changes and of the possible pathways leading to these changes. Traditional planning methods like problem trees, SWOT analyses, logical framework approach etc., were deemed less adapted to serve this purpose and the RIPSEC programme opted for a 'Theory of Change' (TOC) methodology. The TOC approach allows to build a common vision on what change is needed and a dynamic view on how to achieve it.

Aim: Critical discussion of the use of the TOC method in guiding the design, implementation and evaluation of the RIPSEC programme.

Method: The TOC method was introduced to an inclusive range of actors involved in the RIPSEC programme during three regional workshops. Workshops were facilitated by a team constituted by a TOC methodological expert and three members of the RIPSEC management team.

Results: A comprehensive theory of change was developed for each health district. In each case, priority changes and pathways to achieve these changes were identified, followed by a mapping of all the actors (to be) involved in the change process. The assumptions underlying the expected changes were made explicit, and an analysis of possible risks was conducted. Feedback from the workshop participants on the use of TOC was positive: they appreciated the capacity of the TOC approach tool to enhance common ground among the different actors involved and to create a basis guiding future evaluations. One overall and simplified programme TOC was also developed.

Conclusion: The workshop participants committed themselves to work towards the transformation of the Health Districts over the next 18 months. The TOCs will be used as a tool during the implementation phase, but also in the monitoring and evaluation processes.

Reference:
Research priority setting for health systems development to advance Universal health coverage in Uganda: The stakeholder engagements and perspectives

Ssennyonjo A.¹, Rutebemberwa E.¹, Musila T.², Kiwanuka SN.¹, Kaitiritimba R.³, Ssengooba F.¹
¹Makerere University School of Public Health, Kampala Uganda; ²Ministry of Health, Kampala Uganda; ³Uganda National Health Consumers’ Organisation, Kampala, Uganda

Introduction: There is international consensus for countries to make deliberate efforts towards universal health coverage (UHC) which is defined as securing access to all appropriate promotive, preventive, curative and rehabilitative services at an affordable cost. The World Health Report 2013 urges all countries to be both consumers and producers of research to enhance health systems development towards UHC. However, there is limited documentation of research priority setting in developing countries.

Aim: This paper shares experiences from Uganda on setting the national research agenda for UHC. The study aimed at enhancing the knowledge and understanding of health system stakeholders on UHC research agenda and to conduct research priority setting exercises to elicit stakeholders’ views.

Methods: Two national consultation workshops were convened in May and August 2015 to develop a research agenda for UHC in Uganda. The participants included senior and middle level policy makers and key stakeholders in health and other relevant sectors. The meetings followed a participatory multistep multivoting methodology. The data was enriched during the national symposium on situational analysis of UHC in Uganda in August 2015. Stakeholders’ views were analyzed thematically according to health systems building blocks.

Results: Of the total 80 policy makers invited, 57 (71.3%) attended the national consultative meetings. The symposium was attended by 115 participants. It was the consensus of the participants that research should focus on issues of health workforce, governance, financing, service delivery and community health. Respondents recommended research on social determinants health (SDH) and harnessing tools and mechanisms for multisectoral collaboration. They highlighted a need for more research to improve health systems resilience to external shocks such as climate change and disease epidemics.

Conclusion: Research priority setting processes are critical for efforts to strengthen health systems and enhance systems resilience towards UHC. This study adopted a multilevel, multidimensional and multidisciplinary stakeholder involvement to capture the diversity of perspectives. From a practical consideration, many more questions can be asked than answered. Thus, setting priorities for investigation is critical and inevitable. Attention should be paid to the principal challenges for developing countries such as identifying key research questions and strengthening research systems.
6OS1.5
Policy Implementation Barometer in Uganda: What are barriers to policy implementation? Development of a measuring instrument in Uganda
Hongoro C.1, Rutebemberwa E.2, Mukuru M.2, Kasasa S.2, Twalo T.1, SsennyonjoA.2, Sengooba F.2
1Human Sciences Research Council, Pretoria, South Africa; 2Makerere University School of Public Health, Kampala Uganda

Introduction: There is scanty of information on policy implementation monitoring in Uganda and other developing countries yet there is a need to assess why and how policies are working or failing. Monitoring and Evaluation studies usually focus on service delivery – outputs, outcomes and impact. Few tools are available to assess support systems and institutions upstream responsible for implementation yet upstream “interdependencies” determine implementation. Additionally, less attention is drawn to the “ongoing” decisions and performance that support policy implementation.

Aim: A Policy Implementation barometer (PIB) was developed by the SPEED Project in consultation with stakeholders as a tool aimed at assessing the extent of policy implementation specifically whether policies are being implemented as designed and that networks and roles of organizations that are vital for PI ate appropriately mobilised. The PIB further assessed the enablers and constraints to policy implementation.

Methods: A policy implementation barometer was conducted in January and February 2017 to establish the extent of the implementation of malaria, family planning and emergency obstetric care policies to support stakeholder engagements. Over 300 national and subnational policy makers and systems managers were interviewed.

Results: Implementation of malaria policy domains ranged from 25% to 81%, for family planning, from 27% to 71% and emergency obstetric care, from 30% to 67%. Wide differences exist within the implementation of the same policy domains and across different policies. There were variations in awareness of policy components among implementers, political oversight and stakeholder engagement (such as mobilisation of other government sectors, private sector and advocacy at community level). These factors influence workforce deployment, financing, and availability of logistics which are in turn the drivers of effective service delivery.

Conclusion: To enable decision makers take appropriate actions, the findings will be disseminated to duty bearers in government and beyond. The subsequent engagements should focus policy makers on the needs to support policy execution with resources, new decisions and or adjust policy design.
Health Cooperation: Its relevance, legitimacy and effectiveness as a contribution to achieving universal access to health
Remco van de Pas
Medicus Mundi International network - Health for All

Medicus Mundi International – Network Health for All (MMI) is a diverse, horizontal network of development NGOs and other organisations. This paper on health cooperation and its relevance, legitimacy and effectiveness was first discussed at the MMI workshop “Health cooperation beyond aid” in Berlin, on 29 September 2016, and published afterwards. The discussion paper feeds a much needed critical reflection on the role and future direction of development cooperation for health. Some actors call this “Doing Development Differently”. Since the paper was published last year, it has been discussed in several countries and platforms. This session at ECTMIH provides another moment to present and discuss the position paper.

The paper itself is structured around 5 chapters, each of them including a set of critical questions for reflections. The chapters analyse the following 5 issues; Universal access to health as the overall policy aim; What’s wrong with development cooperation?; Development cooperation in times of the SDG’s: Move Beyond Aid; Effective Health Cooperation; What next?

The paper proposes to move health cooperation beyond aid arguing that there must be a paradigm shift from thinking on developing systems to the need to globally redistribute resources (Human, financial, natural) on a sustainable and equitable manner. This requires cooperation between academic institutions, professional development organisations; civil society and popular movement groups. It should not only be on policy implementation and activism in health programmes but also addressing policy coherence via a focus on the ‘first do no harm principle’, such as in the field of economic policies (austerity), unjust trade regimes and climate change.

The paper uses a ‘legitimacy’ framework as a basis to improve future health cooperation. Democratic legitimacy in international cooperation, also in the health sector, can be analysed through five prisms.(1) Effectiveness (2) Accountability (3) Transparency (4) Deliberation (5) Representation. Dealing with the elements of output legitimacy (Effectiveness, Accountability, Transparency) has become in general part of the mainstream debate on how to advance cooperation in the Sustainable Development Era. The paper argues that was is relatively neglected in international health cooperation is the part of input legitimacy (Deliberation and Representation).

Reference:
Health cooperation beyond aid: How we do it - Lecture by the winner of a story contest

Name: To be confirmed on short notice
Organization: To be confirmed on short notice

In May 2017, the working group on Effective Health Cooperation of the Medicus Mundi International Network (MMI EHC) will launch a story contest among Network members and other organizations. The winner will be invited to present his/her paper at this session (as a lecture, no slides).

Referring to a set of “questions for reflection” published as part of an MMI discussion paper on “Health Cooperation: Its relevance, legitimacy and effectiveness as a contribution to achieving universal access to health" , representatives of organizations engaged in international health cooperation will be called to submit their convincing/inspiring answer on “how they do it”.

Provisional set of questions/topics:
1. How/where does your organization define the overall goals (expected outcomes) of your engagement in international health cooperation? Are you happy with this definition? Do you have a “theory of change” which defines how you expect health outcomes to be improved and your organization’s particular role and contribution?
2. Would you call yourself a “learning organization”? If yes, what are your instruments and structures, and who is in charge of your institutional learning? If not, what needs to be done?
3. How are your organization’s or your local partner’s structures and programs integrated in the national health policies and systems of the countries you collaborate with / work in? How do you deal with the (potential) conflict of your solidarity with people and communities and your collaboration with government institutions?
4. Does your institution report back to the “beneficiaries” of your work and to your partner institutions in developing countries? If yes, do you explain them who you are and what you do in the same way you report to your owners and donors? If not, why?
5. Would you accept the labelling of your institution as “a business”? How do you handle the dilemma between doing “the right things” and your institution’s economic sustainability? Is there a “business” and “marketing” approach in your definition of policies and programs?
6. “Your work saves lives, but also contributes to the stabilization of a thoroughly unfair and destructive system of trade and development.” – What is your formal institutional answer to this challenging question? And are you happy with it?

Contacts for enquiries:
MMI secretariat, Thomas Schwarz, schwarz@medicusmundi.org
MMI EHC coordinator, Martin Leschhorn, mleschhorn@medicusmundi.ch

References:
2. Ibid. 1
6OS2.3
Health systems strengthening in fragile settings – The role of international health cooperation
Elies van Belle
Memisa, Belgium

Memisa is a Belgian medical NGO working mostly on strengthening local health systems in settings with problematic access to quality healthcare. This is today mostly in sub-Saharan Africa, with a focus on DRC.

Role of actors in international health cooperation - Main strategic principles of Memisa:
Combine the three actions of strengthening the demand, improve the supply and stimulate good governance of healthcare, in the light of working towards universal health coverage. In order to improve access to quality healthcare, the quality of the services (availability of infrastructure, equipment and medicines as well as of human resources) have to improve at the same time as the accessibility of the services (geographic coverage but mainly financial access with different solidarity mechanisms). A key element in this process is effective local leadership at community as well as at local health system management level.

Strengthening local partners to stimulate ownership and sustainability while “critically” aligning to national health policies and documenting change processes to influence policy at the decisional level.
Collaboration with other national and international actors to aim for complementary and synergetic action – collaboration with academic institutions to increase evidence in and credibility of interventions.
Accent on strengthening local human resources in their clinical and organizational skills. Capacity building based on practical training and peer exchange within the country.

Main challenges:
- Implement “programs” in a donor driven environment in a flexible way through time with room for essential adaptations corresponding to a changing complex environment.
- Motivate local staff that is used to a culture of corruption and counting on survival mechanisms, to effectively deliver quality healthcare and respect equity principles.
- Degradation of the quality of medical and paramedical training and overproduction of human resources for health, with an important disequilibrium between rural and urban settings.
- Find local partners driven by moral and social values and the conviction of the right to health and healthcare, as opposed to random creation of local NGO’s driven by funding opportunities.
- Transparency and harmonization between international actors, often duplicating (malfunctioning) national systems and creating parallel inefficient non-coordinated mechanisms.

6OS2.4
Unpacking the ‘private’ sector and the new business model in international health cooperation: Blurred boundaries and mandates
Anuj Kapilashrami
Lecturer in Global Health Policy, Associate Director for Global Development Academy (university of Edinburgh) & PHM member; University of Edinburgh, Global Public Health unit, UK

Global health governance has undergone transition in recent years towards a more diffuse political and ideological space with the emergence of new patterns of collective action and increased prominence of non-state actors.

Scholarship on private sector often makes a distinction between for profit and non-profit or voluntary sector; the former driven by shareholder interests and profit maximising goals, and the latter acting on behalf of people they represent and are accountable to. Such claims of representation accord the non-profit sector, crudely defined as ‘civil society’, legitimacy in international cooperation.

As a departure from this rhetoric, in this paper, I argue that over the last three decades the distinction between these has become fuzzier, with each constituency exhibiting structure, motives and behaviours that disagree with the above construct. Drawing on specific global and country-specific case studies of corporate social responsibility initiatives, business practices of NGOs and influence of front line organisations of TNCs, I examine these blurred boundaries, functions and mandates within an emergent ‘public-private mix’. I conclude with critical reflections on the implications of such blurring for the democratic deficit within global health governance.
Ending 50 years of bilateral cooperation in Latin America – Strategies for the future?

Stefaan Van Bastelaere

Senior Health Expert, Belgian Technical Cooperation; Direction Thematic and Sectoral Expertise, Belgian Development Agency

In June 2019, after several decades of support, direct government-to-government funding from the Belgian state to Bolivia, Peru and Ecuador comes to an end. During almost 50 years classical projects were implemented, as well as budget support and overarching comprehensive health programs totally embedded in the partner ministries.

The end of this governmental cooperation in MIC’s comes in a constantly changing world, with an ambitious “Agenda 2030 for Sustainable Development” emphasizing on the importance of a holistic and universal vision. Knowledge exchange and collaboration among the various actors are needed more than ever to respond to global challenges. The traditional actors of development cooperation are only a relatively small part compared to all the global players. It will be essential to review the predominant "North-South" approach and the quasi-exclusive focus on low-income countries (LICs). We should no longer distinguish between "them" and "us", nor between "beneficiaries" and "donors" of aid.

This paper gives concrete proposals on how to go forward: more importance and funding should be given to regional initiatives, to knowledge transfer and training, to new technologies, involvement of private and academic actors, development of communities of practices, regional excellence centers. Experiences should be broadly inventoried and shared.
Shaping tropEd, a higher education network in international health, to meet contemporary needs

Reynolds R.
University College London, London, UK; on behalf of tropEd network for Education in International Health

Introduction: TropEd, as a higher education network in international and global health, is an outcome of connections between individuals and institutions. The exchange and sharing of needs and resources through structured interactions was considered beneficial for identifying and solving common challenges when tropEd was founded during the mid-1990s and over time this has led to the establishment of a tropEd as a specific community of practice.

Problem: One of the central challenges international education networks face is how to adapt to the requirements and limitations that members/participants impose while also reflecting contemporary changes in knowledge that shape the network’s organizing academic discipline. TropEd responds to this challenge through identifying and integrating relevant knowledge and practices of tropEd members and students. By describing how tropEd Network members develop quality assurance (QA) practices and guidelines through debate and critical reflection, collaborate across institutions to develop research and training projects in global health that emphasize transdisciplinarity and mobility, this presentation seeks to discuss how a successful community of practice organized as a network changes to meet the community’s needs.

Cases: Three specific examples will be discussed: 1) Quality Assurance practices; 2) Postgraduate mobility programs that facilitate cross-disciplinary training in global health for masters and doctoral level students; 3) Network Structure Feedback and integration practices.

Outcome: Older models of isolated knowledge generation that circulates learning within institutions rather than among them have been gradually eroding since the turn of the millennium. This is especially true in HE where critical practitioners in global and international health have come together to create a community of practice as a network that facilitates transdisciplinary global and international health training. Since learning today is grounded in the ability to identify and integrate knowledge from multiple sources linking institutions and students around the issues that drive research and change in their field, structured sharing, critical reflection and collaboration are required. By examining some of the ways in which the tropEd network addresses these challenges we make an argument for responsive and appropriate change within a community of practice that enable it to meet its contemporary needs.
Networking for quality in international health teaching and learning

Pirard M.¹, Jiang L.², Zolfo M.¹, Stevens M.¹; van Heusden G.¹

¹Institute of Tropical Medicine, Antwerp, Belgium; ²Instructional Psychology and Technology, KU Leuven, Leuven, Belgium

Introduction: The Antwerp Institute of Tropical Medicine (ITM) set up a network in 2008 to strengthen quality in International Health postgraduate training, called LINQED. LINQED involved ITM institutional partners and was supported by the Belgian Development Cooperation. LINQED activities focused on two objectives: “Network to Learn” and “Learn to Network”.

Aim: To identify important conditions for supporting and sustaining quality improvement in international health teaching and learning, in an international networking context.

Methods: We analysed network dynamics, outputs and effects in member institutions between 2008 and 2016 by means of activity reports, periodic self-assessments of effectiveness by members, priority surveys and an external mid-term evaluation.

Results: In 2016 the network counted 17 members, among which 5 Latin-American, 3 Asian, 8 African and 1 European, and was managed by a representative executive committee. The external mid-term evaluation positively evaluated the network’s structural characteristics (“Learn to Network”). Priority surveys served as needs assessment to define and prioritize the “Network to Learn” topics, examples of which are “student assessment programmes”, “course alignment”, “curriculum development”, “thesis supervision”, “critical thinking”, “collaborative learning” and “educational leadership”. Topic priority evolved over time. Initially, there was low interest in eLearning but over the years the demand for collaborative development of distance/blended learning activities became more prominent. Each LINQED initiative also exposed participants to interactive and innovative didactic approaches. Self-assessments showed a significant degree of application of shared didactic approaches and methods in personal practice. More structural integration of LINQED “products” was however hampered by a weakness of institutional structures and resource persons specifically mandated to improve quality of teaching and learning.

Conclusions: The experience of LINQED showed the potential and limits of an international collaborative approach for the improvement of educational quality at individual lecturer and institutional level. The recognition among members of the added value of LINQED for the delivery of high quality and innovative postgraduate education led to the creation of an Alliance for education in Tropical Medicine and International Public Health. Particular attention will be devoted to educational leadership and increasing the range of joint initiatives, including staff and student mobility and collaborative courses.
**6OS3.3**

**Amplifying influence: The West African Network of Emerging Leaders in health policy and systems**

Kwamie A., on behalf of Consortium for Mothers, Children and Adolescents, and Health Policy and Systems Strengthening (CoMCAHPSS), Health Policy and Systems Research, Accra, Ghana

**Introduction:** The West African Network of Emerging Leaders (WANEL) in Health Policy and Systems is a regional network aiming to strengthen the capacity of junior and mid-level, researchers, instructors, managers, policy-makers, media and civil society practitioners active in health policy and systems work. Started in 2015, WANEL’s main activities include online interactions, annual face-to-face meetings, and forging linkages across wider global networks.

**Aim:** This presentation shares the experiences, lessons, challenges and achievements from the development of WANEL as a multi-disciplinary, multi-lingual, cross-country capacity-strengthening network.

**Methods:** We first look at two antecedent initiatives – the Emerging Voices for Global Health, and the Consortium for Health Policy and Systems Analysis in Africa (CHEPSAA) Emerging Leaders Programme. We then analyse the WANEL planning phase, and WANEL’s operational model based on a burgeoning community-of-practice where peer-to-peer learning and exchange is prioritised. Finally, we discuss how WANEL currently seeks to amplify its influence across three axes: ‘upwards’ to access high-level policy fora, ‘transversally’, to move members’ work into programming and practice, and ‘downwards’ to mentor the next generation of West African health policy and systems actors.

**Results:** Early lessons include the importance of network-building slowly and consistently with a few committed people to run with vision: because of previous relationships developed across Emerging Leaders and Emerging Voices, there existed a shared training, orientation and desire for continued regional engagement which could be built upon. Secondly, widespread consultation across a diverse region and constituencies built up ownership and anticipation in the network. Thirdly, having start-up funding has been critical in supporting WANEL activities. This will continue to be a main challenge to the network. To date, WANEL has had multiple achievements, including increasing its profile through social and traditional media, and diversifying its membership. WANEL is currently in a phase of formalising its governance and partnerships with regional policy bodies (such as ECOWAS), media outlets and research institutions.

**Conclusion:** WANEL is addressing West African needs to strengthen the capacities of emerging actors in health policy and systems practice and research, mentoring them into future leaders, and creating spaces to share their work and make their voices heard.
Building sustainable capacity for operational research at a global level using the Structured Operational Research and Training Initiative (SORT IT) model

Zachariah R.1, Ramsay A.1, Kumar A.M.V.2, Zolfo M.3, van Griensven J.3, Kamau E.M.1, Kosgei. R.4, Fatima R.5, Berger S.D.2, Harries A.D.2,6, Reeder J.1

1Special Programme for Research and Training in Tropical Diseases, World Health Organization, Geneva, Switzerland; 2Center for operational research, International Union Against Tuberculosis and Lung Disease, Paris, France; 3Clinical Sciences Department, Institute of Tropical Medicine, Antwerp, Belgium; 4Department of Obstetrics and Gynaecology, University of Nairobi, Kenya; 5Monitoring and Evaluation, National TB Control Unit, Karachi, Pakistan; 6Department of Infectious and Tropical Diseases, London School of Hygiene & Tropical Medicine, London, UK

Introduction: Structured Operational Research and Training Initiative (SORT IT) courses have been developed to train participants in Low- and Middle-income Countries (LMICs) on the practical skills to conduct and publish operational research and foster changes in policy and practice. SORT IT integrates training with implementation of research and is a collaborative partnership led by the World Health Organization (WHO-TDR) and includes Ministries of Health, Non-Governmental Organisations (MSF, Dignitas International, The Union etc.) and academic institutions in the North and South (Institute of Tropical Medicine-Antwerp, University of Bergen, University of Nairobi etc.).

Aim: Describe the approach to capacity building, where research is being conducted and the course outcomes including influence on policy and practice.

Methods: Three one-week workshops are conducted over 9-12 months, with clearly-defined milestones and outputs in line with 80-80-80 targets (80% participant evaluation scores; 80% milestone completion; 80% publication; and 80% assessment for changes in policy and practice). Course outcomes (2009-2016) were assessed by cohort analysis and questionnaires.

Results: Forty-two SORT IT courses were initiated in Asia, Africa, Europe, Latin America and the South Pacific. There were 467 participants (41% female) including 64 nationalities conducting research in 85 countries. Most participants (~65%) were from government programs and non-governmental agencies. Of initiated courses (n=42), 20 were completed by December 2016 and were assessed in relation to targets. All course modules scored ≥80% in evaluations. Of 236 enrolled participants, 213(90%) completed milestones, submitted 250 manuscripts to scientific journals of which 235(94%) were published. In ~85% an LMIC national was the principal investigator (first author). Of publications assessed for policy and practice (n=234), 153(65%) reported an effect. This included changes to program implementation, adaptation of monitoring tools and changes to existing guidelines. Publications included 25 scientific journals (impact factor 0.5-4.4) and covered 21 disease categories. Alumni have now successfully conducted national courses in India, Kenya, and in Pakistan and Colombia using a Global fund grant, improving the prospects for sustainability.

Conclusion: The SORT IT model has been effective in building operational and institutional research capacity and influencing policy and practice in LMICs. It merits continued support for further scale-up.
Virtual student mobility in international/ global health
L. Gerstel¹, M. Flinkenflögel¹, C. Eyber², B.E. Moen³, L. Blair², P. Zwanikken¹
¹KIT Health, Amsterdam, Netherlands; ²Institute for Global Health and Development, Queen Margaret University, Edinburgh, United Kingdom; ³Centre for International Health, University of Bergen, Bergen, Norway

Introduction: Student mobility implies learners use other institutions outside their country to study for a limited time. Physical mobility as practiced in networks like tropEd, a network for education in international health, enriches the learning process for students in international/ global health¹. It could also equip them to work more effectively in a multicultural and multiprofessional environment. With the use of new information and communication technologies virtual mobility may offer similar benefits as physical mobility but without travel.

Aim: To evaluate student experiences with virtual mobility in higher education in international/ global health and develop strategies for improvement.

Methods: In 2016, 22 students from 16 countries enrolled in a blended programme in international/ global health in one of three training institutes (Bergen University, KIT and Queen Margaret University). After a face to face component students took 2-4 e-learning modules, organized by the different training institutes. A pre and post survey including open and closed questions was prepared to explore the expectations and outcomes of the program.

Results: Seventeen students from 14 countries responded to the baseline survey (77%). For 50% of the respondents the possible combination of study with work or family was a reason for enrolling. 53% combined their studies with a paid job. 64% reported obligations in family, voluntary work or other courses. 86% expected an enhanced learning experience by studying in modules from different institutes. They saw potential benefits in exposure to diverse expertise, academic styles and resources as well as benefits to their networks. Students expected challenges including technical issues, communication across time zones, and adaptation to different teaching styles and learning platforms.

Conclusion: Virtual mobility was valued by the students and they expect to benefit from study at different institutes while working/ staying elsewhere. Potential technical challenges as well as issues related to interaction and learning methods were expected. Results of the end survey are collected in September. They will effect in recommendations for use of this innovation in international/ global health education.

Reference:
Introduction: The Institute of Tropical Medicine (ITM) in Antwerp (Belgium) and the Institute of Public Health (IPH) in Bangalore (India) have been developing an increasing know-how in (digital) content delivery and distance learning strategies, shared with several partner institutions in low-resource settings. To generate ownership, to enhance sustainability and maintain local support to projects by partner institutions, skills building workshops on distance/blended learning tools and strategies are regularly organized. These workshops, conceived in a blended format, with 5 weeks of online learning and a 1-week face-to-face, target “pairs” from the same institution: subject-matter experts working closely together with an ICT specialist/facilitator and planning together to deliver topics in either a blended or distance learning format. Based on the “know-how” build up via these workshops and our own practice at ITM and IPH, we will share our common experiences with few digital tools and demonstrate few of these daily use applications.

Aim: In this hands-on session, we will focus on mobile-friendly tools to enhance classroom collaboration and interactivity in different kinds of face-to-face learning scenarios.

Methods: After a short “setting-the-scene” introduction on innovation, technology and collaboration in learning environments, the following scenarios will be discussed and you will be able to test out the corresponding tools:

1) How to captivate large groups of students? (with or without internet): live polling as a fun but also serious way to interact with your mobile-equipped audience. Example of tools: digital polling tools (e.g. Poll Everywhere), Moodle live polling.

2) How to structure a brainstorming session and get as much information as possible out of it? (using both digital and non-digital tools). Example of tools: Airtame, Padlet and the Ketso brainstorming kit.

3) How to test your students’ knowledge in an interactive and efficient way? How to get some (anonymous) feedback on the course quality from your students? (with and without internet). Example of tools: DigiExam, offline survey tools.

Conclusion: After following this session, you will leave with many new ideas on how to enhance and innovate your teaching and learning activities even if the internet connection breaks down.

Reference:

A long-term research agenda for infectious disease research funders
Koopmans M.P.¹
¹Department of Viroscience, Erasmus MC, Rotterdam, Netherlands

GloPID-R, and the research funders that make up its members, focus largely on the role that research plays in public health emergencies. But is there a greater need for a long-term perspective for outbreak research? Marion Koopmans will summarise the strategic advice of the GloPID-R Scientific Advisory Board, with suggestions for a long-term research agenda for infectious disease funders in GloPID-R. This agenda will address issues such as risk assessment and the role of in-vitro, in-vivo and in-silico models in the prediction of emerging diseases.

Data sharing in public health emergencies
Littler K¹
¹Wellcome Trust, London, UK

Katherine Littler will focus on the importance of data sharing in the specific context of public health emergencies, and the role and responsibility of funders in supporting this. She will illustrate the added value of timely sharing data in such contexts, and discuss the challenges to overcome. In addition, she will introduce some of the actions undertaken by the GloPID-R working group to support the sharing of data in public health emergencies.

A long-term research agenda for infectious disease research funders
Reddy P.¹
¹Population Health, Health Systems and Innovations, Human Sciences Research Council, South Africa

A number of social scientists systematically study the nature and effectiveness of global governance arrangements, institutions, and structures. However, they are not currently as well-supported as other infectious disease researchers and they currently operate in isolation from one another across different countries. The speaker will present how these researchers can be globally connected to one another in order to better respond to future infectious disease outbreaks. The proposed network would focus on generating and applying knowledge on global health security governance by supporting, connecting, and mobilising researchers in this emerging field.

Creating links between clinical trial networks
Goossens H¹
¹Laboratory of Medical Microbiology, Vaccine & Infectious Diseases Institute (VAXINFECTIO), University of Antwerp, Antwerp, Belgium

A number of clinical networks exist or are currently being set up around the world, with the aim of carrying out harmonised large-scale clinical research studies on infectious diseases, and preparing to rapidly respond to any severe infectious disease outbreaks. The research funders involved in GloPID-R have set up a group for these clinical networks. Herman Goossens will present this network and how it will promote exchange of experiences between the different networks, and explore how the networks can collaborate together to achieve their goals.
Context-based learning within and for the district health system in Thailand
Pongsupap Y.1, Martiny P.2
1National Health Security Office, Thailand; 2Institut de recherche santé et société, Université Catholique de Louvain, Brussels, Belgium

Introduction: Health services staff in Thailand requires complementary learning for reinforcement of patient centeredness and integration of care. Context based learning (CBL) has been introduced from 2007 onwards targeting mainly health centre staff first, thereafter also physicians and health system managers. CBL is participatory interactive learning through action (PILA) and relies on several learning activities (on-the-job inter-service holistic practice, follow-up of selected families, implementation of health driving projects etc.). Learning follows identification of gaps between expected capabilities and existing performance of individuals, teams, and health systems.

Aim: CBL is to be transformative learning. It aims at transforming individuals’ emotional style. It is a cognitive transformation starting from what is already known. It produces change agents, able to reflect on their working environment and to modify it.

Methods: CBL intended to be first a small-scale implementation research with some action-research features. Proactive field actors were supported by senior experts and academics who produced several working papers and operational guidelines, underscoring each time concepts and hypotheses at stake. Developmental evaluations were carried out. CBL progressively became a large-scale implementation of packages of several actions.

Results: CBL has led to social change bringing closer all health care system actors, including community members, not-health sector professionals and academics. The CBL concept has been defined and is now referred to nationwide. CBL has indirect results related to networking (district matrix extended teams, communities of practice, cooperation with academics), organizational development (functional unit teams, family care team, district health board …) and health policy making (patient’s rights and duties).

Conclusion: CBL is reinforcing patient centeredness, primary care and family medicine, and district health system in Thailand. It is a learning system which bridges health professionals from all levels of care, health and not-health professionals, professionals and communities, health care and educational systems. It is in line with new management approaches which empower field actors. It is both large scale implementation and research.

References:
Introduction: In 2007, a Delphi study was conducted by the Institute of Public Health (IPH) Bangalore exploring the reasons for poor performance of the Karnataka health services. A key finding was the poor managerial capacity of government health managers to plan and implement effective health service delivery. The main critique voiced towards existing training programs was their central organisation at state-level, remote from the field, and their focus on vertical programs and government schemes. IPH and four other Indian non-governmental organisations, in association with the Karnataka state government, and with support from the Institute of Tropical Medicine in Antwerp, launched an “on-the-job” training programme for district-level professionals with the aim to enhance their capacity to address the complexities of health systems management.

Aim: Describe the rationale and analyse the results of the training program, on the basis of program documentary analysis and evaluative research findings.

Methods: Officers at district level and sub-district level (61 in total) were invited to participate in the training program. The course lasted 15 months (August 2009 – November 2010), conducted in 17 face-to-face sessions of 2-3 days each. Experiential learning was used as pedagogical method, and training was conducted using a participatory, team-based approach. The uniqueness of this training was that officers of different cadres were grouped into the same team. Contact classes were followed by mentoring visits customized to each cadre and their responsibilities.

Results: Key achievements included health managerial changes towards a ‘can-do’ attitude, improved networking and communication within the district, both horizontally and vertically, and better use of available information for planning. Nonetheless, the expected improvement in performance through better planning was not observed in all participating sub-districts. This required strong managerial vision and leadership that remained deficient in many. While the consortium was a strength, it also hindered pedagogically-sound teaching material. Overall program gains remained limited since many plans made at the district-level were not endorsed at the state-level.

Conclusions: Capacity-building programs can influence decisions and choices made by health managers, thereby contributing to organizational change. However, this depends on individual, institutional and local environmental alignments.
Fellowship in health systems management: A work-based action-oriented training programme in Uganda

Campos da Silveira V.¹, Tashobya C.K.², Mangwi R.³, Nabiwemba E.³, Orach C.G.³, Criel B.¹

¹Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium; ²Department of Health Policy, Planning and Management, Makerere University School of Public Health, Kampala, Uganda; ³Department of Community Health and Behavioural Sciences, Makerere University School of Public Health, Kampala, Uganda

Introduction: Gaps in health systems management capacity is challenging in low-income countries. An innovative capacity building programme, the Fellowship Programme in Health Systems Management (FPHSM), has been implemented in Uganda since 2012 by the Ministry of Health, Makerere School of Public Health and the Institute of Tropical Medicine, Antwerp.

Aim: The FPHSM aims at improving fellows’ management competencies, increasing their professional confidence and fulfilment, and creating ‘agents of change’. It is a work-based, action-oriented, competency-led, two-year post-master, targeting senior health systems managers.

Methods: The FPHSM is grounded on experiential learning¹. Its design involved the target group, policy makers, civil and professional associations, academia. Value-based changes to increase performance and quality of services guided the discussions, pursuing a ‘can do attitude’. It consists of week sessions face-to-face for theoretical updates at each quarter; periodic contacts with mentors; implementation of an action-research project at their workplace. Evaluation uses seminars, panel discussions, implementation and write-up of their action-research, mentors assessments, final oral examination (external jury), endorsement by external multi-professional board.

Results: One cohort completed the FPHSM in 2014; a second is at present finalising it. Fellows indicated grasping better health systems complexity and recognizing the need to attentively communicate with stakeholders. Stakeholders expressed fellows’ higher confidence towards management tasks and increased efficiency using resources. Success stories were noted with personnel management. Careful selection of candidates with known committed professional profile; appropriate matching between fellows and mentors are facilitating factors. Conciliating busy schedules is challenging for both fellows and mentors.

Conclusion: A work-based programme like the FPHSM can contribute to improved health system management capacity in a country like Uganda.

Reference:
Understanding Local Health Systems (LHS): Innovative ways to acquire a core competency in the Antwerp Master In Public Health (MPH)

Criel B.¹, Pirard M.¹, Garcia-Lopez M.¹
¹Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium

Introduction: The Antwerp MPH is a 10-month program targeting an international audience of health professionals. Course participants have varying degrees of experience with LHS as health system or disease control programme manager, clinician or researcher, be it in the public, non-profit or academic sector. In the first course component, students should acquire the competency to analyse core dimensions of LHS, ranging from quality of care to the stewardship of the LHS.

Aim: Present our teaching and learning approach and illustrate the continued relevance in MPH programs of building competency in understanding LHS.

Methods: Present the course's didactic model and document acquired competencies. Our data are based on student assignments, self-reflections, course evaluations and alumni surveys.

Results: The course faculty have hands-on experience in LHS. This is key in shaping their credibility. The didactic approach combines i) interactive lectures, punctuated by group work where students contextualise taught concepts; ii) guided individual analysis of a LHS in their home situation iii) field visits in small groups to Belgian family practitioners and social welfare services to draw possible lessons for their own context. The course embraces complexity of health systems, acknowledges LHS’s pluralist nature, addresses social determinants in health, highlights the universal character of many challenges LHS face, and is explicit on the value base guiding LHS organisation. Students appreciate the deep anchoring of the course in day-to-day reality of LHS. The MPH being organised out of the participants’ country (and comfort zone) stimulates reflexivity. The didactic approach, balancing de-contextualisation and contextualisation of concepts, encouraging continuous exchange with peers coming from different backgrounds is welcomed.

Conclusion: Students say to “discover” their own (local) health system through a broadened and deepened understanding of it and feel confident to further build on this core competency. They recognise the need to promote dialogue between “horizontalists” and “verticalists”, between public and private health providers, and between health and social sub-sectors.
6OS6.5
A strategy to support the development of inter-organizational and inter-disciplinary governance of belgian local health and social care systems: The case of the innovative “Integreo” program
Macq J.¹, Van Durme Th.¹, Karam M.¹, Ces S.¹, Lambert A. S.¹
¹Institut de recherche santé et société, Université Catholique de Louvain, Brussels, Belgium

Introduction: Twenty pilot projects aiming at developing integrated care for people with chronic conditions (the “Integreo” program) were selected by the National Institute for Health Insurance and Disability in Belgium. These pilots are to be built around a local network of health and social care providers located within a given geographical area and covering a population of 100,000 to 200,000 inhabitants. The pilots are currently in the phase of design, but their implementation is due to start in September 2017. A consortium of Belgian universities – FAITH.be - has been contracted to monitor and evaluate the pilots, but also to promote a culture of quality and change management throughout the implementation process.

Methods: The consortium of universities proposed a combination of tools to render relevant information available to the local project management teams. Moments of interaction between the various stakeholders to facilitate dialogue and to strengthen decision making capacity have been scheduled. A dashboard with key indicators of health (and social) care services, formats of reporting of critical incidents and of annual activities have also been developed. Annual review of results with the local project teams and regular meetings with specific sub-groups of projects (communities of practices) will be facilitated by the consortium.

Results: Initial reactions to the call for projects point to a mix of interest and uneasiness from the side of local, regional and national Belgian stakeholders. This approach is indeed unusual in the Belgian context where field actors are more familiar with formal training sessions as principal tool to change.

Conclusion: Both the beneficiaries of the support, as the members of the university consortium, need to engage into new modes of “training-by-doing”. We hypothesise that this approach is effective in creating performant models of inter-organizational and inter-disciplinary governance of local health and social care networks. The future will however show whether this strategy is feasible in the specific context of the pluralistic, fragmented and poorly coordinated Belgian health and social care system.
From Tropical Medicine to Global Health
Jongma S.Y.¹, Hulzebosch A.², Gerretsen B.³ Supervisor from low resource country⁴
¹TROIE, NVTG, Amsterdam, The Netherlands; ²TROIE, NVTG, Arnhem, the Netherlands; ³OIGT/NVTG, Amsterdam, The Netherlands. ⁴Most probably a hospital in northern India.

6OS7.1
Past.¹
Introduction: In the Netherlands, doctors are being trained in global health and tropical medicine (MD GHTM). This specialty has been acknowledged by their government in 2014 and even receives governmental funding to further professionalize from this year onwards.
Aim: Set context for the need of a specialist generalists globally.
Conclusion: Since the sixties, doctors have been in training to work in tropical areas. But with rising globalism, immigration and urbanisation, some wonder whether there is still a need for such tropical doctors. One major argument in favour of this specialization is the on going crisis in human resources for health. Not only in fragile and conflict-affected states, where the infrastructures around health care are destroyed and the number of healthcare personnel has decreased to a critique number, are these doctors needed. The brain drain in rural areas in most countries with low resources has left a major gap which doctors with a global health and tropical medical background can fill in many different ways. As in high resource settings, migrants, fleeing wars or seeking a better economy, settle in these countries. In some circumstances a cultural approach to health is important to answer the healthcare needs of these migrants. Yet another role for the MD GHTM might be set.

6OS7.2
Present²&⁴
Introduction: Since the start of the specialty training in 2014 the first MD GHTM have had their graduation this year, 2017.
Aim: Showcase the present training program.
Conclusion: Within the training programme there are two pathways. The Classic profile includes surgery and obstetrics/gynaecology, and the Mother-Child profile, focussing on paediatrics and obstetrics/gynaecology. Furthermore there is a three months GHTM course, given in the Royal Dutch Institute of the Tropics, followed by a residency of six month in a low-resource setting. This last section of the training includes both clinical work as well as public health exercises and if possible implementation. The complete training of medical doctors in both global health, as in tropical medicine is unique in Europe.

6OS7.3
Future³
Introduction: Although some major milestones have been reached in the creations of the training program for MD GHTM, there are still many more to achieve.
Aim: Inform about future plans of the training program and the challenges to attain those plans.
Conclusion: In order to maintain the accreditation by the Royal Dutch Medical Association, the training institute has to comply with the Dutch regulations of medical specialties. This medical association has a main focus on Healthcare within the Netherlands, creating some difficulties for MD GHTM working abroad. The Dutch government, states the need for these specialists generalists to have a additional function within Dutch healthcare in order to receive the funding. These two stakeholders, the royal association and the government, require structural changes to the fundaments of the specialty training and training institute in order to stay accredited and keep structural funding. These requirements pose future challenges in the development and professionalization of the specialty training institute.
Discussion
Jongma S.Y.\textsuperscript{1}, Hulzebosch A.\textsuperscript{2}
\textsuperscript{1}TROIE, NVTG, Amsterdam, The Netherlands; \textsuperscript{2}TROIE. NVTG, Arnhem, the Netherlands;

Introduction: Pro’s and con’s have followed each other in the previous presentations on whether the MD GHTM is an asset to the existing healthcare workers in low resource settings.

Aim: An interactive discussion about the need of MD GHTM in the world

Method: Shake- Q. People are asked up front to download this app for free on their mobile devices as to be able the take part in an interactive discussion. On screen multiple choice questions will be shown. The audience, then, gets a chance to choose one of the answers. Polls will be shown on the screen, where after a discussion leader will pass the microphone to start the discussion.

Conclusion: The questions will evolve around the question whether the specialist generalist are needed in the light of the human resources for health crisis. Whether they add value in the country of origin, with experience in global health and tropical medicine on international levels. And if the assumed benefit weights out the investments made in both time and costs.
Rapid diagnosis of *Taenia solium* taeniasis and (neuro)cysticercosis in resource-poor areas

Dorny, P.1, Gabriël, S.2 on behalf of SOLID consortium

1 Department of Biomedical sciences, Institute of Tropical Medicine, Antwerp, Belgium
2 Department of Veterinary Public Health, Ghent University, Belgium

**Introduction**: *Taenia solium* taeniasis/cysticercosis (T/CC) is a neglected zoonotic parasitic disease complex with significant economic and public health impacts. Currently, there are no cheap, easy to apply, sensitive and specific diagnostic tools available for the detection of this parasite. Recently, the EDCTP-funded SOLID project was initiated with partners from Belgium, Tanzania, Zambia, Denmark and Germany to address this gap.

**Aim**: The aim of SOLID is to contribute to the implementation of a rapid, cheap and simple point-of-care (POC) test for the detection of *T. solium* taeniasis and (neuro)cysticercosis in two resource-poor, highly endemic countries in sub-Saharan Africa. The project also aims to improve the *T. solium* disease recognition, diagnostic and clinical case management capacities of these countries as well as their capacity to conduct diagnostic and clinical studies.

**Methods**: The lateral flow test from CDC Atlanta was chosen as the POC test to be used in this project. This test combines two well-validated recombinant antigens – rT24H (detection of CCAb) and rES33 (detection of T-Ab) in one test kit to allow for the simultaneous diagnosis of (neuro) cysticercosis (NCC) and taeniasis with only one drop of serum or whole blood obtained by finger prick. The study will be conducted in Zambia and Tanzania, at the community and primary health facility levels, respectively.

**Results**: Field studies will be conducted in order to enrol participants/patients and collect all samples needed to evaluate the POC test. According to predefined criteria, a number of participants/patients will receive a CT scan for NCC diagnosis. Also, a number of samples will additionally be tested with the specific reference laboratory tests at regional reference laboratories, with subsets tested in Belgium and Denmark for quality control.

**Conclusion**: This project will field validate this POC test. If successful it would be a major breakthrough in early neurocysticercosis case- and tapeworm carrier detection and management, contributing not only significantly to improved health outcomes but also to reducing the risk of transmission. Furthermore, it will furthermore contribute to obtaining more epidemiological information on infection occurrence and transmission dynamics, facilitating calculations of burden of disease calculations and subsequent advocacy.
Introduction: In 2010, the European research network “NIDIAG” on better diagnosis for neglected infectious diseases (NID) was launched to carry out collaborative clinical research and product development in order to improve the diagnosis and management of NIDs.

Aim: NIDIAG’s overarching goal was to improve NID diagnosis by generating evidence about the spectrum of causal pathogens of selected syndromes in different epidemiologic settings, developing clinical guidance and optimizing specific diagnostic devices.

Methods: Syndrome-specific investigations were set up using a series of prospective clinical studies. Patients with one of three syndromes were recruited at primary care level in NTD-endemic areas and a final diagnosis was established. The knowledge on specific pathogens causing the pre-specified syndrome was then used in a second stage to elaborate diagnostic algorithms. In an interaction with product developers several immediate gaps were identified and addressed.

Results: This talk focusses on the clinical research of the NIDIAG consortium and some of the challenges and lessons learned. The harmonization of diagnostic and clinical procedures in multi-country studies is frequently not sufficiently addressed and, particularly in low- and middle-income countries, training and adherence to GCP/GCLP guidelines are particularly challenging. The contribution of qualitative studies assessing the provider perspective was essential to develop appropriate clinical guidance.

Conclusion: The establishment of a quality assurance system that includes internal and external quality control and monitoring activities was a condition for success. The development of clinical diagnostic guidance for resource-constrained settings should take the provider perspective into account.

References:
Towards the development of a field-friendly point-of-care screening test for the diagnosis of TB disease in resource-constrained settings

Chegou N.N., Jacobs R., Corstjens P.L.A.M., Geluk A., Walzl G., on behalf of the AE-TBC and ScreenTB Consortia

1DST/NRF Centre of Excellence for Biomedical Tuberculosis Research and SAMRC Centre for Tuberculosis Research, Department of Biomedical Sciences, Stellenbosch University, Cape Town, South Africa; 2Department of Molecular Cell Biology and 3Department of Infectious Diseases, Leiden University Medical Centre, Leiden, The Netherlands

Introduction: There is an urgent need for user-friendly, rapid, inexpensive yet accurate tools for the diagnosis of tuberculosis (TB) disease at point-of-care (POC) in resource-limited settings. We evaluated the utility of host biomarkers detected in serum and plasma samples as tools for the diagnosis of TB disease, in a large multi-centred consortium project, comprising multiple African and European institutions.

Aim: To evaluate the usefulness of host biomarkers detected in serum and plasma samples as diagnostic candidates for TB disease.

Methods: Individuals presenting with symptoms requiring investigation for TB disease were prospectively recruited at primary health care centres situated in six African countries, prior to clinical diagnosis. Using a pre-established diagnostic algorithm comprising of laboratory, clinical and radiological findings, participants were later classified as having TB disease or other respiratory diseases (ORD). Using a multiplex cytokine detection platform, we evaluated the concentrations of multiple host biomarkers in serum and plasma samples, and assessed their diagnostic potential for TB disease.

Results: Out of 716 participants enrolled from five study sites, 214 were diagnosed with TB disease, 487 had ORD whereas six had an uncertain diagnosis. A seven-marker serum biosignature comprising of CRP, transthyretin, IFN-γ, CFH, apolipoprotein-A1, IP-10 and SAA identified on a training sample set (n=491), diagnosed TB disease in the test set (n=210) with sensitivity of 93.8% (95% CI, 84.0-98.0%), specificity of 73.3% (95% CI, 65.2-80.1%), and positive and negative predictive values of 60.6% (95% CI, 50.3-70.1) and 96.4% (95% CI, 90.5-98.8%) respectively, regardless of HIV infection status or study site. In a smaller follow-up study, six-marker plasma biosignatures comprising of relatively new biomarkers in combination with some of the markers in the serum biosignature, diagnosed TB disease with a sensitivity of 100% and specificity of 89.3% irrespective of HIV status. Interestingly, an excellent correlation was observed between biomarkers detected in serum and plasma.

Conclusion: We have identified blood-based biosignatures with strong potential in the diagnosis of TB disease irrespective of HIV infection status or ethnicity in Africa. The development of a field-friendly POC test; adaptable to finger-prick whole blood and based on these biosignatures, is currently ongoing.
Missed opportunities for early access to infant diagnosis of HIV-exposed infants and care of HIV-infected infants in Burkina Faso

Coulibaly, M., Meda, N., Yonaba, C., Queuadoogo, S., Thio E., Congo, M., Barry, M., Ye, D., Kam, L., Blanche, S., Van de Perre, P., Leroy, V., for the MONOD Study Group ANRS 12206.

Introduction: Universal antiretroviral therapy (ART) is recommended for all HIV-infected children under two years of age since 2010, but early infant diagnosis (EID) is required. We investigated the Prevention of Mother-to-Child-HIV-Transmission (PMTCT) cascade, the staffing, the quality of infrastructures and the knowledge, attitudes and practices (KAP) of children’s caregivers regarding PMTCT, paediatric HIV-infection, EID, and paediatric ART in Ouagadougou, Burkina Faso.

Methods: We conducted a cross-sectional survey in 2011 in all health care facilities involved in PMTCT and paediatric HIV care in Ouagadougou. We assessed their coverage cascade through a desk review of registers and a semi-structured questionnaire administered to health-care workers (HCW). A sociologist conducted a qualitative KAP survey using interviews of caregivers of children <5 years attending paediatrics wards.

Results: In 2011, there was no offer of care in primary health care facilities for HIV-infected children in Ouagadougou. Six district hospitals and two university hospitals provided paediatric HIV care. Among the 67,592 pregnant women attending antenatal clinics in 2011, 85.9% were tested for HIV. The prevalence of HIV was 1.8% (95% Confidence Interval: 1.7%–1.9%). Among the 1,064 HIV-infected pregnant women attending antenatal clinics, 41.4% received a PMTCT. Among the HIV-exposed infants, 313 (29.4%) had an EID, and 306 (97.8%) of these infants tested received their result within a four-month period. Among the 40 children initially tested HIV-infected, 33 (82.5%) were referred to a health care facility, 3 (9.0%) were false positive, and 27 (90.0%) were initiated on ART. Although health care facilities were adequately supplied with HIV drugs, they were hindered by operational challenges such as shortage of infrastructures, laboratory reagents, and trained HCW. Out of the 37 caregivers interviewed, 35% stated EID as a strategy. All caregivers thought it was necessary to treat HIV-infected children, although they did not know what interventions could be used.

Conclusions: The PMTCT cascade revealed bottlenecks in PMTCT interventions and HIV EID in Ouagadougou in 2011. The staffing in HIV care and quality of health care infrastructures were also insufficient. Community awareness programs should be strengthened to inform caregivers and improve the uptake of EID and care.
Introduction: This session will present an overview of the developing good practice in the management of health data sharing platforms to improve the impact of disease control programmes in an ethical and equitable manner.

Methods: This session will summarize the TDR experience in working with others to establish these data sharing platforms and the findings of a new survey undertaken with Wellcome Trust to present emerging good practice in this area.

Results: The emerging good practice in data sharing suggests a need to balance the safety and privacy of those who have been the source of data with the needs of researchers as contributors to the platform and those wishing to access the platform. This requires the establishment of a data access committee to decide on the appropriate use of the data for public health benefit, the best mechanism to represent research participants' interests and the creation of an oversight committee to ensure wherever possible good practice is being followed. The governance framework must be able to accommodate the cultural and political issues within the different legal arrangements from which the data are drawn. Technical issues will include the need for curation and standardization in the deposited data.

Conclusion: There are scientific, economic and ethical reasons for sharing data. Data-sharing platforms increase the size of the database and allow in-depth analyses and data-mining, studying subsets of subjects, geographical distributions and temporal trends that are not otherwise possible on individual trials. These analyses are a powerful tool to inform research funders and policy makers as to what we know and can be used in practice and what we do not know and need to study more. In creating a platform a wide range of issues will need to be addressed to safeguard the rights of the original research participants, satisfy the needs of the original researchers and provide a resource that is valuable for secondary uses. A platform will need to be high quality and sustainably resourced. Whilst there is no best practice, existing initiatives provide a number of potential good practice solutions that can inform the creation of a new resource.
Data sharing in schistosomiasis: Beginning the discussion and experience gained from CONTRAST: (A comprehensive multidisciplinary schistosomiasis research network in sub-Saharan Africa)

Narcis Kabatereine Bujun
African Capacity Building Advisor, Schistosomiasis Control Initiative, Imperial College London, 15 Bombo Road, P. O Box 1661 Kampala

Introduction: Schistosomiasis poses a significant public health and economic burden but has the lowest level of implementation of preventive chemotherapy, and its burden and morbidity continue to rise despite the World Health Assembly WHA65.21 resolution to eliminate it. Optimizing schistosomiasis control efforts and achieving elimination as outlined by the WHO roadmap requires keeping committed schistosomiasis researchers and implementers together to develop effective control strategies; however, currently there is no centralized schistosomiasis data sharing platform. A stakeholders meeting supported by WHO/TDR in November 2015 opened discussions on how to share data and how to circumvent current barriers. Options identified from these discussions, and experience gained from data sharing under CONTRAST, a multidisciplinary and comprehensive research network across sub Saharan Africa where 92% of schistosomiasis burden occurs, involving scientists based in sub-Saharan Africa and their European partners will be presented.

Aim: To optimize schistosomiasis control efforts targeting mainly Sub-Saharan Countries through data sharing in order to achieve schistosomiasis elimination according to the set WHO milestones.

Methodology: Open discussion meetings with control and research stakeholders from different endemic countries and some non-endemic partner countries. The results were supplemented by information gained through extensive literature review and experience gained from CONTRAST, where large datasets were successfully collected, shared, analyzed, published and stored under one platform to date.

Results: Scientists and control managers agree that data sharing is the way forward as it optimizes use of data and resources and that pooled data allows easier identification of gaps in knowledge. They all agree that to achieve sustainability, data sharing must be beneficial to all involved.

Conclusion: WHO/TDR should host the data platform or identify an appropriate host for the platform and act as guarantor. For sustainability, the shared data should remain a sustainable resource that can be re-used at will.
Clinical data management in the European Register of Cystic Echinococcosis (ERCE), the HERACLES project

Tamarozzi F.¹, Rossi P.², Galati F.³, Cretu C.M.⁴, Vutova K.⁵, Akhan O.⁶, Siles-Lucas M.⁷, Brunetti E.¹, Casulli A.² and the “HERACLES Extended Network”

¹WHO Collaborating Centre for the Clinical Management of Cystic Echinococcosis; Department of Clinical Surgical and Paediatric Sciences, University of Pavia, Italy; ²WHO Collaborating Centre for the epidemiology, detection and control of cystic and alveolar echinococcosis; European Union Reference Laboratory for Parasites (EURLP); Department of Infectious Diseases, Istituto Superiore di Sanità, Rome, Italy; ³SIDBAE, Information Technology, Istituto Superiore di Sanità, Rome, Italy; ⁴Colentina Clinical Hospital – Parasitology department, University and Pharmacy “C. Davila”, Bucharest, Romania; ⁵Specialised Hospital of Infectious and Parasitic Diseases “Prof. Ivan Kirov”, Sofia, Bulgaria; ⁶Department of Radiology, Hacettepe University, School of Medicine, Ankara, Turkey; ⁷Instituto de Recursos Naturales y Agrobiologia de Salamanca (IRNASA), Consejo Superior de Investigaciones Científicas (CSIC), Salamanca, Spain; ⁸B. Abela-Ridder (WHO - Dep. NTDs, Geneva, Switzerland); A. Angheben (Sacro Cuore Hospital - Negrar, Verona, Italy); M. Belhassen Garcia (Salamanca University Hospital, Research Center of Tropical Diseases of University of Salamanca, Salamanca, Spain); S. Borys (University Center of Maritime and Tropical Diseases, Gdynia, Poland); F. Bruschi (Laboratory of Medical Parasitology, Universita di Pisa, Pisa, Italy); G. Calleri (Amedeo di Savoia Hospital, Turin, Italy); L. G. Chianura (Niguarda Ca’ Granda Hospital, Milan, Italy); B. Dezsényi (Egyesített Szent Istvan és Szent László Hospital, Budapest, Hungary); M. F. Harandi (Research Center for Hydatid Disease in Iran, Kerman University of Medical Sciences, Kerman, Iran); M. T. Giordani (Department of Infectious and Tropical Diseases, Veneto ULSS 6, Vicenza, Italy); V. Gjoni (Berushi) (Institute of Public Health, Tirana, Albania); L. Gogicaishtivi (S. Virsaladze Research Institute of Medical Parasitology and Tropical Medicine, Tbilisi, Georgia); D. Goletti (National Institute for Infectious Diseases L. Spallanzani, Rome, Italy); E. Lapini (San Donato Hospital, Arezzo, Italy); F. Karim (Mitford Hospital, Dhaka, Bangladesh); S. Mastrandrea (University Hospital, Sassari, Italy); G. Menozzi (Santa Maria Nuova Hospital IRCCS, Reggio Emilia, Italy); M. Muhtarov (Multi-Profile Hospital for Active Treatment “Kardzhali”, Kardzhali, Bulgaria); M. Ramharter (Medical University of Vienna, Vienna, Austria); A. Recordare (Regional Hospital Ca’ Foncello, Treviso, Italy); R. Shkjezi (Institute of Public Health Control of Infectious Diseases Department, Tirana, Albania); A. Taggi (S. Andrea Hospital, Rome, Italy); C. Torti (Unit of Infectious Diseases, Department of Medical and Surgical Sciences, University “Magna Graecia”, Catanzaro, Italy); G. Vitale (A.O.U.P. Paolo Giaccone, Palermo, Italy); L. Zammarchi (Careggi University Hospital, Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy).

Introduction: Cystic Echinococcosis (CE) is a zoonotic parasitic disease highly endemic in southern and eastern European countries. Its burden is unknown due to lack of efficient, specific and mandatory reporting systems. Neglect hampers the collection of good quality data to inform evidence-based diagnostic and therapeutic strategies, adding to the lack of prospective randomized trials and resulting in suboptimal case management and allocation of resources. In the context of HERACLES project (Human cystic Echinococcosis ReseArch in CentraL and Eastern Societies, funded by the European Commission under the Seventh Framework Programme, http://www.HERACLES-fp7.eu/), the European Register of Cystic Echinococcosis (ERCE) was launched in October 2014.

Methods: ERCE (http://www.HERACLES-fp7.eu/erce.html) is a prospective, observational, and multicentre register of patients with probable or confirmed CE enrolled in hospital or outpatient setting (Rossi et al., 2016). ERCE database is located within the secured IT network of Istituto Superiore di Sanità, in Rome, where patient data, including demographic information and CE-related clinical data (unequivocal identification of single cysts, cyst characteristics and treatments administered) are recorded. Patients are assigned a unique ID code preventing data loss or duplication. ERCE is structured taking into account the peculiar features of CE and to address the evolution of cysts over time.

Results: As of March 2017, 27 centres in 12 countries (Albania, Austria, Bangladesh, Bulgaria, Georgia, Hungary, Iran, Italy, Poland, Romania, Spain and Turkey) adhered to ERCE, with 1,097 patients recorded. ERCE responds to a long-standing need for a CE register with online data entry, and recorded data largely outnumber the total of National cases reported by most European and Adjacent endemic countries.

Conclusion: This confirms the need for a better report system of CE at European level. We encourage other researchers and clinicians around the world to participate in ERCE, and help the many patients suffering from a complex and chronic disease that has been under the radar for too long.

Reference:
Clinical trial data platforms: Lessons from malaria applied to a range of infectious diseases

Guerin P.J. ¹, ², ³ & Laura Merson ¹, ², ³

¹ Infectious Diseases Data Observatory (IDDO), Oxford, UK; ² WorldWide Antimalarial Resistance Network (WWARN), UK; ³ Centre for Tropical Medicine and Global Health, University of Oxford, Oxford, UK

Introduction: The sharing of primary data with external researchers to encourage secondary or meta-analysis is increasingly mandated by academic journals and funders of biomedical research. The expectation is that data reuse will avoid duplication of effort, address gaps in knowledge, save resources and translate into better public health policies and practice. However, sharing the results of clinical trials performed in low- and middle-income countries highlights a variety of complex issues: which data sets should be shared, where should the data be stored, how will those who collected the data be recognised and the rights of trial participants respected?

Aim: The WorldWide Antimalarial Resistance Network (WWARN) was established in 2009 to provide evidence on the efficacy of antimalarial medicines through a unique platform for the sharing and analysis of trial data. A key aim of the platform is to maximise the use of available data by collating, standardising and harmonising clinical trial data to answer critical public health questions that are impossible to answer through analysis of results from individual clinical trials.

Methods: Consultation with researchers contributing data resulted in the development of a collaborative ‘study group’ model which involves data contributors fully in the analysis of pooled data and ensures that they receive due recognition for their work. After many successful applications of this model, data contributors have responded to the evolving landscape of data sharing by requesting other options for data access. To meet these needs, WWARN has introduced a new model of decision making where decisions regarding data access can be delegated to a Data Access Committee. Now, those contributing new datasets can decide between these two data access options.

Results: This prototypic model is now being adapted for neglected infectious diseases such as visceral leishmaniasis and emerging infections such as Ebola, through the Infectious Diseases Data Observatory, resulting in an economy of scale that it would be difficult to achieve by developing each platform de novo.

Conclusion: The WWARN/IDDO model shows that it is possible to move towards a more open model of data access whilst continuing to recognise the contribution of data contributors and protect the rights of trial participants.
A special case: Sharing data in infectious disease outbreaks and emergencies
Littler K. L.
Policy Department, Wellcome Trust, London, United Kingdom

Introduction: This talk will consider the barriers and facilitators to data sharing in global health emergencies. It will focus on engagement with key groups working across research and response such as Non-Governmental Organisations, the pharmaceutical industry and affected communities, drawing on the experience of the Wellcome Trust as part of the GloPID-R Data Sharing Working Group and within the WHO Blueprint R&D Global Coordination Mechanism.

Aim: To develop a system for rapid data sharing in public health emergencies that can both support the scientific research response and inform the public health response.

Methods: This session will outline the challenges of sharing research data in global health emergencies and will describe some of the approaches used to engage with key stakeholders across the data sharing spectrum with a focus on specific data needs such as product development and the generation of actionable evidence to inform response.

Results: This work highlights the importance of mapping the needs of key groups, and framing engagement in order to identify i) cross-cutting issues that affect all stakeholders and which may form the basis for consensus and ii) specific needs in order to direct and focus targeted activities. Building a broad coalition with the involvement of stakeholders from a range of communities supports the identification of emerging areas of consensus. Finally, for maximum impact this must capitalise on innovative approaches to sharing research findings rapidly (such as pre-prints) and the political attention on public health emergencies.

Conclusion: There have been repeated calls for rapid sharing of data, for both research and response, in public health emergencies, most recently in the 2014 Ebola and 2015 Zika epidemics. Although progress has been made, particularly in the building consensus and principles, much remains to be done to achieve implementation of rapid data sharing. Understanding the needs of key stakeholders and focusing engagement activities accordingly is critical to ensuring that implementation efforts are sustainable and achieve impact.
Networking for health and development: Core concepts, challenges and evaluation
Van Steirteghem S.1,2
1Head of Paediatric Department, A. Paré University Hospital, Mons, Belgium; 2Masters thesis, London School of Hygiene and Tropical Medicine, London, UK

Introduction: Cooperation is in the roots of human behaviour and networking has become a standard mean for organisations to address complexity. In today’s linked-in world, the actors of change in health and development need to understand how to build robust networks based on the values of dignity in development for all. The effectiveness of networks is not straightforward and their evaluation is another challenge in these complex environments. Each network has specific objectives and will organise itself to reach them. What are the keys of fruitful cooperation and what practical answers should be given by each network remains an open question. The knowledge gap is even greater for multi-platform networks active in health and development.

Aim: To set the theoretical framework of the session and open the debate among the panellists and the public.

Methods: I will present a literature review on multi-platform networks in health and development, with a highlight on the organisational aspects of the network and their impact. The main challenges will be presented to open the debate.

Results: Successful networks have a common purpose, clear objectives and a non-hierarchical structure. They encourage voluntary participation and the input of resources for the benefit of all members. The generic qualities of networks will be to build collaboration, relationship and trust, under a facilitative leadership, fostering diversity and working toward democratic governance to build capacity1. Each network will have a unique way to build collaborative capacity and the guidance can only be made in relation to the local settings2. Following stages of forming, norming, growing and performing, networks are in constant evolution3 and participatory approaches have successfully been used to evaluate and improve networks1. In-depth interviews of members of Be-Cause Health can be used to assess their response to the challenges of advocacy and how to build consensus, the balance between independence and institutionalisation and how the structure of the network can be adapted to improve its effectiveness.

Conclusion: In the complex environment of health and development, each network will have to make its way to successful collaboration. This panel discussion is an opportunity to share their experience.

References:
Free trade agreements and the health of workers: Balancing the opportunities and the risks

Steendam J.1, Vangeel L.2


Introduction: Unacceptably high levels of global inequality and precarious employment are recognized as a serious threat for the achievement of the universal right to health. The broad scope of most modern trade agreements (FTAs) leads to substantial, however mostly indirect, effects on the various social determinants of health.

Aim: To address the power relations that shape the global trade framework. To review the impact of trade agreements on various aspects of health such as the health of workers through employment and working conditions.

Methods: Health impact assessments of recent trade and investment treaties (e.g. DR-CAFTA, TPP) and text analyses of treaties in negotiation.

Results: A recent trend in international trade shows the return of bilateral negotiations, as opposed to the tentative of GATT and WTO to set global standards. However, negotiations between countries with different economic strength pose reasons for concern.1 Rules established by FTAs tend to deepen already existing social and economic inequalities. For example, FTAs can cause a loss of government revenue, restraining the capacity to implement social policies. Furthermore, liberalization and provisions on the protection of intellectual property can compromise the accessibility of essential health care services and medicines. Lastly, determinants of health can dramatically change when the policy environment is weak on protection of the public health sphere. For example, precarious labour conditions affect the health of workers and families and are associated with poorer health status. The flexibility demanded by the competition shaping the global economic system enforces the need for ‘uncertain’ (e.g. temporary) working conditions, shaping the global trade framework. Labour provisions in FTA’s prove the most efficient if backed by broad civil society involvement and strong rules on enforcement and mechanisms of control.2

Conclusion: Trade can contribute to global growth and job creation, but this growth isn’t necessarily contributing to improvement of employment and working conditions if they aren’t accompanied by adequate standards regarding social protection and enforcement of social labour organisations.

References:

7OS1.2
Trade agreements, a Trojan horse for quality health care accessible for all? A perspective and testimonial of a mutual health benefit association
Loridan J.
Policy advisor department of European and international affairs of the Belgian Union of Socialist mutual health funds ‘Socialistische Mutualiteiten’, Brussels, Belgium

Introduction: Mutual Health Associations in Belgium are tasked with the management of the compulsory insurance for health and disability in Belgium. Together, these associations represent all Belgian socially insured persons, totaling more than 11 million people. They are defined by Belgian law as not-for profit associations who in spirit of providence, mutual assistance and solidarity aim to promote the physical, mental and social well-being of their members. The Belgian mutuals aim to make high quality healthcare accessible and affordable to all. This organizational model provides an alternative to private commercial insurers and commercialization of healthcare. Alerted by the expanding list of domains that were discussed by the EU in its FTA’s and the different opinions on the organization of healthcare and social protection by the partners with whom the EU was discussing such FTA’s, the Belgian National Intermutualistic Council established a taskforce on the EU trade agreements in 2014.

Aim: To study and describe the possible impact of FTA’s like TTIP and CETA on health and the Belgian health insurance system.

Methods: All Belgian mutuals worked together in a taskforce of the Belgian National Intermutualistic Council, to analyze the risks of FTA’s on health.

Results: A position paper on TTIP1 was written and an analysis of CETA² took place. The mutuals have reasons to fear that TTIP and CETA will bring about further commercialization in health and health care and will touch upon various domains of social protection. Five general recommendations were formulated, concerning transparency of the negotiations, exclusion of health insurance and services from the FTA’s, pharmaceutical policies, national policies on health prevention and promotion and the exclusion of any investor-state arbitration mechanism.

Conclusion: Throughout the last years the Belgian mutuals increased their knowledge on the FTA’s and they continue to work together, also with the International Association of mutual benefit societies (AIM) and with a larger coalition of Belgian CSO’s to ignite the debate with European and Belgian stakeholders and politicians to improve the FTA’s and to make sure that high quality health care remains accessible and affordable to all.

References:
1. CIN-NIC (2016), ‘Le TTIP, un cheval de Troie pour des soins de santé de qualité accessible à tous? Position des mutualités belges sur le Partenariat transatlantique de commerce et d’investissement (TTIP)’.
2. AIM (2016), ‘AIM recommendations on CETA’.
Introduction: European trade negotiations have become analysed either in relation to more narrow aspects concerning provisions on intellectual property rights and their enforcement or as part of broader outcome. This analysis will bring up and discuss common health concern across countries in relation to new generation trade negotiations.

Aim: Analysis of impacts of trade agreements on policy space for health

Methods: Legal, documentary and case-based analysis of negotiated texts, statements, assessments and focus of European Union trade negotiations and policy documents

Results: European Union formal relationship with trade negotiations and development has been framed by Cotonou Agreement with stronger developmental focus. However, the shift in global trade policy towards more comprehensive negotiations covering investment, services and TRIPS+ has implied new concerns over implications to policy space and access to medicines in many countries.

Conclusion: The change in European Union trade policy focus has implications as trade policy focus has shifted toward intellectual property rights, investment protection, regulation and services trade. Drawing from recent European Union trade negotiations the paper discusses particular issues with respect to investment and services, intellectual property rights, government procurement and regulation. While European Commission has sought to emphasise human rights, labour and more recently gender, their role and relevance remains so far minor. The paper discusses power and politics of how trade negotiations are conducted with focus on common health policy interests across countries in North and South.
Introduction: It is largely known that refugee children and particularly those separated by their parents (unaccompanied refugee minors) are at great risk of developing a range of mental health problems because of their past experiences and current living circumstances. Yet, little is known on how those problems evolve over time and how these possible evolutions are associated with possible determining factors, such as past trauma, current daily stressors, gender and age.

Aim: In this paper, we will give an overview of the research on the prevalence of mental health problems in unaccompanied refugee minors, and the factors associated with these, in particular from a longitudinal perspective.

Methods: A review of studies on the mental health problems of refugee children and unaccompanied minors will be presented, together with the findings of a longitudinal follow-up of a large group of unaccompanied minors in Belgium.

Results: Prevalence of different mental health problems (i.e., anxiety, depression and posttraumatic stress disorders) is high in refugee children and even higher in unaccompanied minors. These problems also do not decrease over time. Factors associated with this mental wellbeing are a mixture of past traumatic events, but also current daily stressors, both material and social stressors, mainly evoked through the particular living circumstances of these refugee minors.

Conclusion: The impact of past traumatic events on the mental health of refugee children has been documented extensively. Yet, up till now, little research existed on the impact of daily stressors, both material and social stressors on these minors’ health, certainly not in a longitudinal perspective. This study demonstrates that the way governmental authorities are approaching these groups can put them at even greater risk of developing (or increasing) mental health problems through a detrimental impact of the daily stressors associated with their concrete living contexts.
The Ugandan approach to Africa’s largest refugee crisis – How does mental health fit in? An interactive conversation
Yaxley C.¹
¹United Nations High Commission for Refugees, Uganda Office

Introduction: Uganda, the small, land-locked, low-income country in Eastern Africa, currently hosts more than 800,000 refugees who have fled from northern neighboring country South Sudan. With the average daily influx of 2800 new refugees into Uganda in March 2017¹, these figures are thought to surpass over a million halfway through the year. Uganda was recently chosen as a role model for its pioneering, comprehensive and generous approach in dealing with the refugee crisis. Providing both refugee protection and as well as host community integration through land donation, the approach enhances social cohesion and benefits both refugees and the communities hosting them.

Aim: This presentation creates the unique opportunity for an interactive and ‘live’ dialogue between academics, researchers, and health-practitioners working in global health and the people offering humanitarian assistance on the forefront of Africa’s largest refugee crisis. With a focus on the (unmet) mental health needs of refugees, we hope to enable a more constructive dialogue between needs, services, and challenges faced from all sides of this crisis.

Methods: The chairs, panel and audience will partake in an online, video Skype conversation with Charlie Yaxley, the external press associate of United Nations High Commission for Refugees (UNHCR) in Uganda. Live from Uganda, the chairs using an interview-format to get a structured discussion started, will address questions such as the magnitude of mental health problems following the refugee influx, refugees’ coping strategies and health seeking behavior, and existing psychosocial problems and services offered in the UNHCR refugee care program under precarious conditions. We will then open up the floor to the panel and the audience to engage and converse directly with Mr. Yaxley in regards to the overall crisis.

Results and Conclusion: Uganda can no longer handle Africa’s largest refugee crisis alone. Without the necessary global involvement, all efforts till date in Uganda to realise a functional and integrative model of refugee care that allows them to thrive, falls into jeopardy. Conversations are often starting points to enabling change, and we hope this particular instance can be a small step in that process of transformation.

Reference:
PACCT® (Psychiatry Assisting the Cultural diverse Community in creating healing Ties):
An intervention methodology strengthening the social networks of refugee families in order to make mental health more accessible and effective for refugee children and adolescents

Nédée A.1, Imeraj L.1,2
1Child & Adolescent Psychiatry-Solentra vzw, University Hospital Brussels/Free University Brussels, Brussels, Belgium; 2 Department of Medicine and Pharmacy, University Hospital Brussels/Free University Brussels, Brussels, Belgium

Introduction: Migration is a complex process comprising of potentially destabilizing risk factors for mental health, which severely can affect the development of a child and adolescent. The impact of unprocessed traumas of refugee children is often neglected. Stigmatization of mental illness, cultural beliefs, language barriers, illiteracy in framing the request for help in an occidental society, remain an underestimated concern.

Aim: The mental health status of refugees needs to be understood as the result of complex interactions between stress factors due to pre and post migration, trauma and the acculturation process. It needs to be taken into account in order to foster accessibility and effectiveness of mental health institutions. PACCT®, an intervention methodology developed by Solentra vzw, a Belgian NGO active in the domain of refugees’ mental health, has this aim.

Method: PACCT® consists of a two tier intervention departing from a holistic vision on mental health whereby (1) community based interventions serve as a basis for the creation of a sustained call for help from the refugees’ family searching for a common problem definition, a common solution and fostering integration and (2) offering transcultural diagnostic and therapeutic support for refugees.

Results: The community based interventions foster (i) resilience, through mobilizing all (in)formal actors within the families’ respective communities, (ii) experiential, cultural sensitive learning of all participants and (iii) the early detection of mental health problems. Mobilizing all relevant stakeholders, in order to make cross-cultural therapy more accessible and effective, has appeared to be a successful practice in specialized mental health care for refugees. The ethno-psychiatric assistance in community-based promotes refugees’ engagement in the call for help. Offering specialized transcultural clinical services allows correct referral and adherence to therapy.

Conclusion: Through PACCT®, we aim for the development of both Belgian and broader, international mental healthcare networks where professionals and non-professionals work together towards integration, enabling cross-cultural therapy to reduce the potential impact of trauma, migration and acculturation on the mental wellbeing of refugees.
Providing mental health care to migrants: Different needs, different settings (example of Italy)
Severy N.¹
¹Medical Department, Médecins Sans Frontières, Brussels, Belgium

Introduction: The increase in migration towards Europe these last years as a result of wars, political persecution, endemic poverty and the hope of a better life led MSF to develop several projects to support the migrants in the Middle East, European transiting countries and reception countries. Since April 2016 and the closure of the Balkan road, Italy became the primary entry point to Europe for refugees and migrants, with 181,436¹ migrants in 2016 (14% were unaccompanied minors and 13% women). Many of those arriving in Italy are refugees from conflict zones or highly repressive states. Many passed through Libya, where the situation has become increasingly chaotic since 2014, where they often experience violence and took great risks for crossing. Exposure to violence and traumas suffered by the migrant population before and during the migratory journey and complex situations experienced in the period following their arrival are a major source of psychological distress.

Aim: MSF tries to integrate as much as possible mental health care within medical activities for migrants, trying to adapt settings to the needs and changing contexts.

Methods: In response to the varied needs, MSF Italy developed the following interventions: Psychological first aid (PFA) in the “search and rescue boat”; PFA activities at disembarkation ports for shipwreck survivors; PFA activities for migrants in transit (Rome, Ventimiglia, Como); Mental health care/transcultural psychotherapy to asylum seekers hosted in reception system (Trapani).

Results: Migrants show great needs of mental health care, but interventions have to be adapted to their migration journeys. They also have to be framed within the socio-cultural context. Factors such as cultural mediation, multi-disciplinary approaches, medico-legal aspects, identification of vulnerable groups, and the coordination between all actors contributed to more tailored psychological and psychiatric care.

Conclusion: Due to migrants’ numerous experiences of violence and traumas before, during and after their journeys, an early detection of psychological suffering and adapted mental health care are needed to prevent and treat mental disorders. It requires tailoring the different strategies to fit their changing mental health needs.

Reference:
Gaps in R&D pipelines and investments persist for many diseases which disproportionately affect the poorest. In recognition of this, as well as the need for improved R&D preparedness for outbreaks of severe infectious pathogens and growing levels of antibiotic resistance, WHO member states called upon the WHO to develop a Global Observatory on Health R&D (Observatory) as an openly available data platform. The Observatory aims to collate, monitor, and analyse information about health R&D to help stakeholders identify health R&D priorities and take coordinated action. The examples of tuberculosis and malaria will be discussed and compared in this session. The landscape of available health products, R&D investments, R&D needs and approaches to identifying and setting health research priorities will be examined. The Observatory is evolving. To ensure its success, it is critical that stakeholders, private sector, academia and non-governmental organizations participate in sharing health R&D information. This ECTMIH session is a forum to engage in its development.

References:
2. Global Observatory on Health R&D http://who.int/research-observatory/en
Research and development (R&D) priority setting processes for tuberculosis: How are they structured and how should they be structured?

Khan M., Rahman-Shepherd A., Painter H., Fletcher H.
London School of Hygiene and Tropical Medicine, TB Centre, London, UK

Background: In May 2013, the World Health Assembly mandated establishment of a Global Health Research and Development (R&D) to support identification of R&D priorities and coordinated actions to address these. While there is a clear impetus for improved R&D priority setting, designing an optimal priority setting is not straightforward. To inform development of the R&D Observatory, tuberculosis was selected as a case-study owing to the large number of processes used for R&D prioritisation, and the need for efficient use of limited resources for tuberculosis research.

Methods: We compared nine R&D prioritisation processes including those used by academics, pharmaceutical companies, philanthropic foundations, research funders and international policy organisations, using a standarised tool. We also conducted in-depth interviews with 24 stakeholders - covering academics, funding body representatives, international policy makers/technical advisers and national disease control programme staff – to investigate views on how an optimal process should be structured.

Results: There was wide variation in the number and types of participants involved in individual R&D prioritization processes (with national health managers, patients and civil society rarely included), in the information provided to base prioritisation decisions on, and in the transparency of reporting. There was consensus among interviewees that the purpose of the exercise and the criteria for assessment of R&D options need to be clearly defined upfront. Effectiveness/efficacy and deliverability at scale within high disease burden settings were the two key criteria for ranking priorities that interviewees commonly cited. In terms of information required to score R&D options, retrospective evaluations of R&D investments to assess real impact was mentioned consistently. The process for determining the final priority list suggested by the majority of interviewees was a combination of discussions about criteria that should be used to rank R&D options, followed by independent ranking, followed by a further discussion and consensus generation.

Conclusions: Priority setting processes for tuberculosis vary greatly and broad improvements in transparency of reporting and wider engagement of country-level stakeholders were identified through our study. Criteria on which R&D prioritisation processes rank options may vary depending on the purpose, but these should be made explicit upfront.
Introduction: Tuberculosis (TB) is the leading infectious disease killer in the World. In 2015, 1.8 million people died from TB, including 400,000 with HIV infection, and there is an increasing threat from drug resistant forms of the disease, demonstrating both the need to develop more effective and affordable rapid diagnostics, drugs and vaccines as well as to enhance implementation of existing interventions. Research and Innovation is one of the 3 key pillars of the newly launched WHO “End TB Strategy” that aims at ending the global TB Epidemics by 2030 within the context of the Sustainable Development Goals.

Aim: an international roadmap for TB Research was developed to identify key priorities along the spectrum of TB R&D. The objective was to identify the key research questions to achieve TB elimination by 2050, and thus the key areas in which to encourage investment, with a view to enhancing and harmonizing funding across the research spectrum and providing basis for better coordination of research.

Methods: a combination of systematic reviews, open web-based and Delphi-like survey; and a transparent, objectively measurable priority ranking exercise.

Results: Based on these, the roadmap presents a coherent list of priorities for research over the next decade and key questions for the development of better tools for improved TB control. Research priorities are identified in the areas of epidemiology, fundamental research, research and development of new diagnostics, drugs and vaccines, and operational and public health research.

Conclusion: this was the first time a multidisciplinary research agenda for TB research was developed. It has been contributing to the reflexion on TB R&D over the last 5 years and its impact would need to be objectively measured within the context of the newly launched WHO “End TB Strategy”.

Reference:
Global trends show a 48% decrease in malaria mortality between 2000 and 2015. This reduction was largely due to the deployment of core interventions to prevent, diagnose and treat malaria. However, such interventions are jeopardized by increasing mosquito resistance to insecticides and increasing parasite resistance to drugs. Their effectiveness is also lessened by the challenges of reaching all people at risk, the difficulties in identifying and treating all malaria cases, the lack of better preventive and therapeutic options.

As stated in the WHO Global Technical Strategy for Malaria (GTS), the vision of WHO and the global malaria community is a world free of malaria. To reach the GTS goals the WHO GTS recognizes that there is a need to harness innovation, to generate new knowledge, new products and optimize their effectiveness. Several products are in the late stages of development, including vector control tools, a drug for *P. vivax*, and more sensitive rapid diagnostics; pilot implementation of the world's first malaria vaccine is expected to begin in 2018. The results of the malaria eradication research agenda (malERA Refresh) consultative process to guide malaria research and development will be available later this year. The work of the WHO Observatory in Health R&D, in collaboration with the malaria community, will help to track progress and highlight what research is needed for public health impact.
Increased use of manual vacuum aspiration in the treatment of incomplete abortions followed by a decrease in maternal mortality: A cross sectional study from Malawi

Odland M.L.¹, Jacobsen G.¹, Kafafulafa U.², Gadama G.³, Odland J.Ø.⁴ Darj E.¹

¹Department of Public Health and Nursing, Norwegian University of Science and Technology, Trondheim, Norway; ²Kamuzu College of Nursing, Blantyre, Malawi; ³Obstetrics and Gynaecology Department, College of Medicine, Blantyre, Malawi; ⁴The University of Tromsø - The Arctic University of Norway, Tromsø, Norway

Introduction: In Malawi, maternal mortality is high and unsafe abortion is one of the top five causes of maternal death. Incomplete abortion is a common complication after abortion, and can be treated surgically or medically. In the first trimester manual vacuum aspiration (MVA) is the preferred surgical method because it is safer and cheaper. Still, most hospitals in Malawi continue using curettage, which requires more resources and leads to more complications. Three hospitals in Malawi showed a declining rate in the use of MVA between 2008-2012 despite the recommendations from WHO and Malawi Ministry of Health.

Aim: To investigate the treatment of incomplete abortion in three public hospitals in the southern part of Malawi between 2013-2015.

Methods: All files from female wards between 2013-2015 were reviewed retrospectively. In total, information on obstetric history, demographic data and treatment were collected from 7270 women treated for incomplete abortion.

Results: The overall use of MVA at these three hospitals between 2013-2015 was 11.4%, which is lower than previously. However, there was an increase in all hospitals during 2015, where one of the hospitals performed MVA in almost 50% of the cases in 2015. This hospital had a decline in maternal mortality of 10% during these years with no deaths due to abortion in 2015. The other hospitals were using MVA less frequently and did not have the same decline in maternal mortality. Medical treatment was only used in 1.4% of the cases.

Conclusion: In this study, we investigated the treatment of incomplete abortion in three hospitals in Malawi, which had previously shown a decrease in the use of MVA. The use of MVA continues to be low except for one hospital, despite the recommendations from WHO and Malawi Ministry of Health. If this is acted upon, it could reduce maternal mortality and morbidity due to abortions, as seen in one hospital with higher use of MVA. Educational sessions for clinicians and making equipment more available have been suggested as possible ways to deal with this issue, and will be investigated further.
An alliance of invisible partners: International actors’ legitimacy seeking practices in the Malawian abortion law reform

Kloster, M.O.¹,²
¹Centre for Development and the Environment, University of Oslo, Oslo, Norway; ²Department of Health and Society, Faculty of Medicine, University of Oslo, Oslo, Norway

Introduction: International actors, notably donors and NGOs, play an important role in the health policy process in donor-dependent countries, influencing agenda-setting, policy formulation and implementation in significant ways. Their prominent role raises questions about the nature and legitimacy of their involvement and influence in national policy processes.

Aim: Focusing on a case study of an on-going process to liberalise Malawi’s strict abortion law, I examine the legitimacy seeking claims and practices international actors have mobilised as they have sought to influence policy debates.

Methods: This study draws on theoretical and methodological perspectives from health policy analysis and ethnography. Open-ended, in-depth interviews were conducted among purposively selected actors in Malawi, both policy actors and representatives from the civil society, religious organizations and the church. Formal interviews were complemented by participant observation at national and local level. In addition, a comprehensive mapping of the policy actors was conducted.

Results: In this paper, I am interested in the processes by which actors without any formal mandate to participate in national policy-making and legal debate work to establish themselves as legitimate policy actors – on both sides of the abortion debate – considered crucial to achieving policy influence. I identify a series of legitimacy seeking practices international actors employ, including working through official actors, facilitating civil society coalition-building, consulting traditional and religious authorities and framing safe abortion as a public health imperative. At the national level, these strategies all depend on international actors taking the role of silent partner, with policy change attributed to national or local initiative.

Conclusion: I argue that the adoption of these legitimacy seeking practices have helped international actors strongly influence recent policy developments, including the drafting of a bill to expand the indications for legal abortion. At the same time, policy change is threatened by the absence of true popular mobilization. Significantly, adopting the stance of a silent partner whose contribution is hidden has rendered international actors vulnerable to accusations of cultural imperialism as part of a well-orchestrated de-legitimation attempt by an emerging and well-organized international pro-life lobby.
Working on the edge: Ambiguity, responsibility and ethical dilemmas faced by abortion providers in Ethiopia
McLean E.¹, Desalegn D.², Blystad A.¹, Miljeteig I.¹
¹Department of Global Public Health and Primary Care, University of Bergen, Norway, ²School of Medicine, Addis Ababa University, Ethiopia

Introduction: In 2005 Ethiopia changed its abortion law to curb the high maternal mortality. This has reduced complications from abortions, but 47% of abortions are still conducted outside established health facilities and are considered unsafe. Abortion is legal if the woman’s pregnancy is a result of rape or incest, if her health is imperilled, the foetus has serious deformity, if she suffers from physical or mental deficiency or if she is under 18. The word of the woman is sufficient to qualify for safe abortion service.

Aim: The objective of this study is to enhance the understanding of how abortion providers perceive and interpret the abortion law, their personal experiences and challenges of providing abortion services as well as their reflections on their own roles as abortion providers.

Methodology: Data collection took place from March to May 2016 in Addis Ababa at different health clinics providing abortion services. 30 in-depth interviews and 3 focus group discussions were conducted with 45 abortion providers at governmental and non-governmental clinics. Thematic analysis was used in the interpretation of the findings.

Results: During their interaction with patients seeking abortion, the health workers describe conflicting concerns, burdensome responsibility and ambiguity concerning how to interpret the law. They describe efforts to balance their religious faith and values against their professional obligations and concern for women’s health. This negotiation is particularly present in the care for women who fall outside the laws’ indications. They usually have to handle these ethical dilemmas and decision-makings alone without guidance. Many face stigma from fellow colleagues not performing abortions and keep their job a secret from family and friends.

Conclusion: Health workers in Ethiopia experience high moral workload balancing on a difficult line trying to manoeuvre between the abortion law, their personal values and their genuine concern for the health of women.
Introduction: In Burkina Faso, there is a political commitment and support for family planning program. Induced abortion, by contrast, is legally restricted and socially reprobated. This leads to a high restriction on the use of drug such as Misoprostol known to be an abortifacient. Misoprostol is officially introduced in the health care system for the treatment of postpartum hemorrhages and post abortion care. However, there is also growing evidence that women increasingly use it to induce abortion through their social network. Thus, the use of misoprostol involve norms and practices that encourage ways of doing things Beyond restrictive public health policies.

Aim: This study highlights the gaps between public health policy objectives and the socially embedded practices around the used of misoprostol in Burkina Faso.

Methods: Ethnographic fieldwork was conducted between March 2016 and February 2017 in Ouagadougou, the capital city of Burkina Faso. In-depth interviews were conducted with 46 women of reproductive age (18 to 42) with different marital status and, from different professions, 5 pharmacists, 1 abortionist as well as direct observations in places were misoprostol circulates illegally such pub and pharmacies.

Results: The results show that some women prefer inducing abortion with misoprostol over the use of modern contraceptives due to their perceived “consequences” of the latter. Induced abortion has become a morally acceptable practice through the use of misoprostol because some women compare its mode of action with emergency contraceptive and also consider it to interrupts pregnancy as spontaneous abortion. In addition, abortion with misoprostol can be considered less costly compared to surgical methods because some women get it free of charge through their social network. Finally, induced abortion with misoprostol is more discreet because the drug can be used anywhere to induce far away from prying eyes. This reality answers the expectations of it users because of the legal framework that condemns induced abortions in Burkina Faso.

Conclusion: Misoprostol by changing the way of performing induced illegal abortion, changes at the same time the perception and attitude towards abortion. Misoprostol plays a role in the social construction of illegally induced abortion in Burkina Faso.
The healing environment: Resilience factors for refugees in overcoming psychological trauma

Nathan Bertelsen, M.D.,1,2 Hawthorne Smith, Ph.D.2

1Global Health Program, Koc University School of Medicine, Istanbul, Turkey; 2Bellevue/NYU Program for Survivors of Torture, New York University, New York City, USA

Introduction: At this time of unprecedented population movements and conflict across the Mediterranean and the world, migration is everywhere, and growing fast.

Aim: This is a presentation aimed to define resilience factors in overcoming psychological trauma among forced migrants and refugees, with a focus on victims and survivors of torture.

Methods: Given by a physician and a psychologist from a rehabilitation center for torture survivors, this presentation defines what it means to heal from psychological trauma, and how clinicians construct and maintain effective healing environments in clinical practice. Three waves of physical and mental health needs are examined of forced migrants and trauma victims who flee their homes to take refuge abroad, and the key role that social integration plays for forced migrants to aim to live healthy lives in their new homes. The question, “How do we remain healthy and human during a crisis?” is raised, to guide discussion for how providers can restore the humanity for patients and clients who suffered dehumanization during their trauma. To structure discussion, specific case examples of survivors of migration-related trauma are raised from academic centers in both New York City and Istanbul. Migration to both the United States and to and through Turkey will be explored, with special emphasis on the migration crisis in the Mediterranean.

Results: Drawing from clinical experience, this presentation focuses on facilitating discussion among the presenters, panellists, and audience to define resilience factors seen in our collective clinical work. Common themes for resilience factors have been found to be: hope, safety and dignity. Concrete ways to achieve these abstract concepts are defined in the case examples from this presentation.

Conclusion: Survivors of torture and similar migration-related psychological trauma commonly feel that they are dehumanized during their ordeal. Trauma continues to persist beyond initial events, and continues to affect patients and clients' well-being until they achieve a self-directed sense of recovery, facilitated carefully by experienced clinicians. Resilience is the key to recovery, and there are identifiable and reproducible learned behaviors by clinicians to empower their patients and clients to achieve recovery through their own resilience.

References:

Prior to 2014, little experience on victims of torture (VoT) existed within MSF: while VoT were undoubtedly attending MSF consultations in many projects around the world, they were either not identified as VoT, or the expertise within the teams was lacking to engage in the long term process of rehabilitation, either the context was not conducive.

In 2014 MSF opened a clinic for the rehabilitation of victims of torture and other forms of ill-treatment in Athens. A second center was inaugurated in Rome in 2015. The target population are migrants, asylums seekers and refugees residing in the urban areas. While some have lived in Rome and Athens for few years, many have blocked in Greece after the signature of the EU-Turkey deal in a march 2016. Patients access the facility through referral by other organisations, either by self-referral. Regular sessions of information and training are organised by MSF teams to sensitize the different actors working on migration, on the thematic of torture and services provided by the MSF centres.

After a first in-take sessions the beneficiaries access a comprehensive package of care: a multidisciplinary team composed of psychologists, medical doctors, cultural mediators, physiotherapists and social workers establish together the rehabilitation path for each patient. While the majority of consultations are individual, the team have recently started to organise group sessions for mental health and physiotherapy.

In 2016 a total of 285 patients, from more than 30 nationalities, have been admitted in the two centres, female representing the 21%. The 86% of beneficiaries are between 19 and 45 years old, while minors (less than 18y) represent the 5% of cases.

MSF teams benefit from the partnership with other organizations that have been doing rehabilitation of torture victims for many years that allow them to exchange experiences and expertise and rely on a network of partners providing legal and social services, amongst others, for beneficiaries.

While MSF has invested in the past years in increasing its expertise on rehabilitation of torture victims, its work remains a drop in the ocean. According to estimates more than 30% of migrants arriving to Europe have been victims of ill-treatment and the few existing rehabilitation centers do not have the capacity to take them in charge. New facilities and new strategies are needed to respond to their needs.
8OS2.3
Health and nutrition assessment of refugee children in the island of Chios, Greece
Vicky Fumadó
Pediatric Unit, Infectious and Imported Diseases, University Hospital Sant Joan de Deu, Barcelona, Spain

Introduction: Almost half of the world’s refugees are children. These children do not receive the usual health care, they do not follow the vaccination scheme nor growth and cognitive development control and also feedings practices are altered. We aimed to assess the health status of children refugee population living in Chios by a paediatric team.

Patients and Methods: a prospective study was performed during two months in Chios Island (Greece) from two refugee camps and shelters adapted for vulnerable people. The official camp has host 1400 people, but currently it is estimated 3.600 refugee people living in the Island, of which 38% are children. A census with code identification of the paediatric population was created. A team formed by a paediatrician and a paediatric nurse collected socio-demographic and clinical information and assessed health status in refugee’s children.

Results: During November and December 2016, 816 outpatient visits of 478 refugees children were recorded in Chios island, being 54.2% males. Median of age was 6 years (IQR 3-10) 75.4% came from Syria. Main symptoms were cough 330/793 (41.6%) and fever 159/794 (20.0%) 49 (6.2%) referred diarrhoea. Among under five nutritional status was measured W/H according WHO 2006 standards: 8.7% had Global acute malnutrition (GAM), among girls GAM was 10.2% and severe acute malnutrition (SAM) 4.1%. Global chronic malnutrition was 11.6%. Behaviour disorders were another prevalent reason of consultation (data will be shown in the conference).

Conclusions: Health care for children in refugee camps must organize activities that allow a strict follow-up of the child, so as not to lose growth and psychosocial evaluation. Percentage of SAM among girls is in Acute Food Crisis classification, and the GAM is in the limit of Food insecure. One of the limitations was passive recruitment; it was not a randomized trial. Children are the most vulnerable and pathologies such as malnutrition and behavior disorders (enuresis, impulsivity, depression) may go unnoticed but there is a well-targeted care. Surveillance could be a toll for detect children with special risk that could benefit from specific psychological support.
Refugee health training in Turkey: Medical student activities and reflections
Bilge Eylem Dedeoglu, Nathan Bertelsen, M.D.
Koç University School of Medicine, Istanbul, Turkey

Background: There are now an estimated three million Syrian refugees in Turkey, with one quarter in Istanbul. As the country's next generation of health professionals, medical students in Turkey are increasingly exposed to the humanitarian crisis in Syria in both patient care and the public sphere. This crisis impacts their thoughts, beliefs, attitudes, and behavior, and their medical education must respond with skills to provide health care for asylum seekers, refugees and migrants. Training must cover cultural diversity, social determinants, and ethical challenges, in order to share health care resources equitably across all populations. In this way, students learn how enriching social responsibility and humanitarian relief can be in the practice of medicine.

Methods: This student presentation provides examples of and reflections about curricular and extracurricular activities in refugee community engagement at Koç University School of Medicine in Istanbul, Turkey. Outside of the university hospital, medical student interns rotated through public family health centers, community health home visits, tuberculosis centers, dental clinics, specialized women and children public hospitals, and the mental health regional hospital. Additionally, interns launched a regular community health education seminar series at non-governmental organizations (NGOs) who serve Syrian refugees. These health education seminars raised awareness and answered questions about childhood vaccines, poison prevention and control for children, contraception, musculoskeletal pain, osteoporosis and other health issues raised by the community.

Results: Language, legal status, and discrimination were found to be common themes in health care delivery for migrants in Istanbul. Migrants were found consistently to have serious health disparities and access barriers in the public health system. This included both Syrians, who receive a limited package of services from “special protective status,” and non-Syrians from Iraq, Afghanistan, and elsewhere who are undocumented. Legal status issues always delayed or obstructed health care delivery, as no recognized pathway to respond to undocumented migrants was found. Problems in health care delivery were often explained by differences in “tradition.” Almost every migrant reported some form of discrimination during their encounters with the public health system. Most hospitals do not offer interpreters, and migrants are asked to bring their own. In response, more Turkish health care providers are learning Arabic.

Conclusion: Turkish medical students increased their appreciation of public health access that many previously took for granted before this migrant health experience. Lack of interpreters was found to be the greatest health disparity. Medical students increased their awareness of social determinants of health, especially legal status, as a necessary step to care for their patients. Medical students found that navigating an entirely unfamiliar health system required certain language, cultural, social, ethical and health system competencies in the local community health system, far beyond medical knowledge alone, that they did not learn at the university hospital. Answering questions at community health education seminars put medical students in a new position of authority, outside their comfort zone, which both challenged and expanded their ability to adapt their medical knowledge in new ways. Overall, integrating migrant and humanitarian health care into their curriculum was perceived by students to increase the quality and value of their medical education. These future doctors not only felt better prepared for “real-world” clinical challenges, but also better human beings to contribute to a more integrated global society.
Introduction: HPV infection is the main cause of cervical cancer, which claims the lives of 266,000 women each year, mainly in developing countries. Since 2013, Gavi provides support to conduct HPV vaccine demonstration programmes and national roll-out for Gavi eligible countries.

Aim: To provide an overview of Gavi support to HPV vaccine programmes (demonstration and national roll-out), and specifically regarding the lessons learnt of demonstration programmes conducted in Gavi eligible countries.

Methods: Review of different evaluation reports including those which countries were required to conduct within the framework of demonstration programme, such as WHO HPV Post-introduction tool to assess feasibility; HPV vaccine coverage survey; and micro-costing analysis of programme implementation costs using the WHO Costing tool for HPV vaccination.

Results: Since the first HPV vaccine demonstration programme in Kenya in 2013, one million girls have been vaccinated with Gavi support. By the end of 2016, Gavi had helped 23 countries to conduct HPV vaccine demonstration programmes – the first step towards national introductions. Three countries, Honduras, Rwanda and Uganda, have introduced HPV in their national immunisation programmes. Lessons learnt from demonstration projects include: countries have achieved more than 80% coverage by administering the HPV vaccine through schools; delivery costs drop if the HPV vaccine is delivered through existing health clinics and outreach sessions to schools; communication and social mobilisation activities to raise grassroots awareness of cervical cancer prevention are critical to the success of HPV vaccination programmes; and multi stakeholder engagement and building political will at all levels are vital to the expansion of HPV programmes.

Conclusion: Based on the lessons learnt, in 2016 the Gavi Board approved two main changes in the HPV support: First, countries can now apply directly for Gavi support to fund national introductions rather than starting with a demonstration programme. Countries also have the option of a phased introduction. Second, countries can opt to vaccinate multiple age groups - between 9 and 14 years - in the first year of their programme. That should allow Gavi-supported countries to protect around 40 million girls from cervical cancer by 2020, averting an estimated 900,000 deaths.
Cancer of the uterine cervix in Maputo, Mozambique: Incidence, trends and HPV infection distribution

Carrilho C.1, Lorenzoni C.1, Vilajeliu A.1, Ismail M.R.1, Castillo P.2, Menendez C.2, Ordi J.2

1Department of Pathology, Faculty of Medicine - Eduardo Mondlane University & Maputo Central Hospital, Maputo, Mozambique; 2ISGlobal, Barcelona Institute for Global Health, Hospital Clinic - Universitat de Barcelona, Barcelona, Spain

Introduction: Cancer of the uterine cervix is a major health public problem in sub-Saharan Africa. In Mozambique, data available about cancer incidence and the burden of human papillomavirus (HPV) infections are scare. This information could help guiding preventive policies in Mozambique.

Aim: To determine the frequency and distribution of HPV infection in cervical cancer and the temporal trends in their incidence in an 18 year-period in Maputo-Mozambique.

Methods: Review all cancers of the uterine cervix of the cancer registry of the Maputo Central Hospital diagnosed in the Department of Pathology from 1991 to 2008. Incidence rates were calculated in the 5-year age-group of the Maputo population, as well as age-standardized rates (ASRs) and average annual percentage changes (AAPC). We also reviewed data on HPV in cervix of Mozambican women. HPV frequency and genotyping were detected by PCR in cervix samples from women from general population and from tumor tissue from women with invasive carcinomas.

Results: Over the 18-years period of the study, 2,383 cancers of the uterine cervix were registered, corresponding to 33% of all cancers in women. Cervical cancers increased during the period of study at an average of over 4.7% (95%CI: 3.4–6) per year, with an ASR from 34.0 per 10^5 in 1991-1996 to 62.0 per 10^5 in 2003-2008. Regarding HPV studies, prevalence of HPV, HPV DNA was detected in 100% of cervical carcinomas. The most frequent HPV genotypes were HPV16 (47.0%) and HPV18 (31.3%).

Conclusion: Cancer of the uterine cervix accounts for more than one third of all cancers in women in Mozambique and most of them are associated with HPV 16/18 infection. Widespread implementation of screening for cervical cancer and specially vaccination against HPV infection should be considered a health priority in Mozambique. The introduction of the HPV 16/18 vaccine could potentially prevent the occurrence of nearly 75% of cervical cancers.
HPV vaccination of pre-adolescents in Mozambique: Main outputs and lessons learnt from the Human Papillomavirus (HPV) demonstration project in three districts

Matsinhe G.1, Mindu C.2, Bardaji A.2,3, Cambaco O.2, Augusto O.2, Macete E.1,2, Menéndez C.2,3, Sevene E.2,4, Munguambe K.2,4
1Ministry of Health, Mozambique (MISAU), 2Centro de Investigação em Saúde de Manhiça (CISM), Manhiça, Mozambique; 3ISGlobal, Barcelona Institute for Global Health, Hospital Clinic - Universitat de Barcelona, Barcelona, Spain; 4Faculdade de Medicina, Universidade Eduardo Mondlane, Maputo, Mozambique

Introduction: Cervical cancer incidence rates in Mozambique are among the highest in the world, affecting 42-60/100,000 women each year. It is, by far, the most frequent cancer in women of all ages and with the highest mortality rate. HPV vaccination has proved high effectiveness in subjects not exposed to HPV, thus, pre-adolescents represent the main target group for intervention.

Aim: To provide an overview of the main process and outputs of the HPV vaccine demonstration project in adolescent girls conducted in three districts of Mozambique.

Methods: This program was conducted in three districts: Manhiça district (Maputo province) in the South of Mozambique, Vila de Manica (Manica province) in the Centre, and Mocímboa da Praia (Cabo Delgado province) in Northern Mozambique. This program included two vaccination campaigns, the first one in 2014 (3 doses administered) and the second one in 2015 (2 doses administered).

This evaluation consisted in a review of the full process and main results from the first HPV vaccine introduction demonstration program in Mozambique following the recommendation from GAVI to assess the feasibility to deliver the HPV vaccine to Mozambican adolescent girls in order to guide next steps in Mozambique prior to introduction of the vaccine at a national scale.

Results: Girls were vaccinated primarily through a school-based strategy. This strategy was reinforced with vaccination in the community and health centers. In total, 144 schools were involved and 13,244 eligible girls (10 years of age) were expected to be vaccinated; of which 8,294 through schools and 4,950 outside school. In the first vaccination campaign, coverage of vaccinated girls was of 73.3% (3 doses completed). In the second campaign, vaccination coverage increased up to 79.3% (2 doses completed). Reasons for missed vaccination included not being aware of the HPV campaign, fear of pain, school absenteeism, unregistered girls in the baseline census, unknown girls’ age, and living in peri-urban as opposed to rural areas.

Conclusions: Acceptance of vaccination against HPV among Mozambican adolescent girls was confirmed. Vaccination coverage achieved in the Mozambique demonstration program suggests that threshold coverage recommended by GAVI in order to step to national-scale implementation is feasible if vaccination strategy relies mainly on the school-based approach. However, efforts need to be done to improve mechanisms to increase awareness about the vaccination, capture and track eligible girls, and reach girls not attending school, particularly in urbanized areas.
Awareness of cervical cancer and willingness to be vaccinated against Human Papiloma Virus (HPV) in Mozambican adolescent girls

Bardaji A.1,2,3, Mindu C.3, Augusto O.3, Casellas A.1, Cambaco O.3, Macete E.3, Menéndez C.1,2,3, Sevene E.3,4, Munguambe K.3,4

1ISGlobal, Barcelona Institute for Global Health, Hospital Clinic - Universitat de Barcelona, Barcelona, Spain; 2Consorcio de Investigación Biomédica en Red de Epidemiología y Salud Pública (CIBERESP), Barcelona, Spain; 3Centro de Investigação em Saúde de Manhiça (CISM), Manhiça, Mozambique; 4Faculdade de Medicina, Universidade Eduardo Mondlane, Maputo, Mozambique

Introduction: Sub-Saharan Africa concentrates the largest burden of cervical cancer (CC) worldwide. The introduction of the HPV vaccination to prevent cervical cancer in low and middle-income countries is an urgent and strategic approach to meet global health targets on women’s health. We aimed to assess the awareness on cervical cancer and HPV infection, and anticipated acceptance of HPV vaccination for cervical cancer prevention among adolescent girls in three districts of Mozambique.

Methods: This was a quantitative, cross-sectional study conducted in three districts of Mozambique prior to the first round of the HPV vaccine national demonstration programme. The study targeted adolescent girls aged 10-19 years old identified from schools and households. Face-to-face structured interviews were conducted assessing knowledge on CC and HPV prevention, and acceptability and willingness to be vaccinated against HPV.

Results: From August 2013 and May 2014, a total of 1147 Mozambican adolescents were enrolled in the selected districts (Kha-Mavota and Manhiça in Southern Mozambique, and Mocimboa da Praia in the North). The majority [84% (967/1147)] of girls had heard of cervical cancer, however, only 33% of the participants (373/1144) recognized having ever heard of HPV. When asked whether they would accept to be vaccinated if a vaccine was available in Mozambique, 91% (1025/1130) of girls answered positively.

Conclusions: Our study anticipated high acceptability of HPV vaccine in Mozambique among adolescents, as well as adequate awareness about CC. These results highlight that targeted health education programs are critical for the acceptance of new tools to prevent CC, and are encouraging to advance towards reduction in CC related mortality and morbidity in Mozambique.
Community views on cervical cancer and HPV vaccination in Mozambique – A qualitative study
Khátia Munguambe1,2, Carolina Mindu1, Azucena Bardaji3, Olga Cambaco1, Elisa Mavili4, Graça Matsinhe4, Benigna Matsinhe2, Eusébio Macete1,5, Clara Menéndez1,3, Esperança Sevene1,2
1Manhiça Health Research Centre, Manhiça (CISM), Mozambique; 2Faculty of Medicine, Eduardo Mondlane University (UEM), Maputo, Mozambique; 3Barcelona Institute of Global Health (ISGlobal), Spain; 4Extended Program for Immunization, Ministry of Health (MISAU), Maputo, Mozambique; 5National Directorate for Public Health, MISAU, Mozambique

Introduction: Cervical cancer incidence and fatality rates in Mozambique are among the highest in the world. In response to the urgency of HPV vaccine introduction, the country conducted HPV demonstration projects from 2014-2015, aiming to assess the Extended Program on Immunization’s potential and limitations for HPV vaccine delivery among 10 year-old girls through schools, communities and health facilities.

Methods: A qualitative study was conducted to evaluate awareness of cervical cancer as part of the assessment of the feasibility of introducing HPV vaccine countrywide. The study took place in three districts with distinct sociocultural and geopolitical contexts. Data collection comprised 27 focus group discussions with community members and 30 in-depth interviews with health and education professionals. Interviews and discussions were recorded and transcribed in verbatim. Content analysis was performed to sort information regarding perceived illnesses of the womb, interpretation of signs and symptoms suggestive of cervical cancer, perceived preventive and treatment, and views on the HPV vaccine.

Results: Participants associated signs and symptoms of cervical cancer with a range of health problems including vector-borne or parasitic infections (malaria and schistosomiasis), STIs, and infertility. The term “cervical cancer” was only mentioned by teachers, community leaders, formal and informal health care providers and one woman whose close relative had suffered from the illness. Local terms equivalent to “cervical cancer” were identified: mbombo or mudzoko (incurable, dirt-releasing wound), ku bola xibelekelo (decaying baby-carrying sac), mwana mimba (illness of the womb provoking spontaneous abortions). The community attributed these health problems to sharing of clothes, dietary habits, heredity, sexual intercourse (particularly with uncircumcised men), multiple sexual partners, and witchcraft as a result of infidelity. Although the majority would accept the vaccine, barriers to vaccination were identified: political connotations to health campaigns, mistrust in the communication channels, fears of side effects (such as infertility), religious prohibitions, girls absenteeism in the schools, limitations in ascertaining girls’ age, and fears that the vaccine would encourage sexual activity, low risk perception, previous negative experience with research.

Conclusions: There is a need to reinforce information about the presentation, transmission mode and prevention of cervical cancer, and to clarify about the nature, purpose and benefits of the vaccine.
Introduction: In Mozambique, cervical cancer is a public health threat, due to its high incidence and very limited access to early diagnosis and treatment of precancerous lesions. The existence of safe and efficacious HPV vaccines has made international organisations to support HPV vaccine introduction in low-income countries. Most of these countries are carrying or have recently completed demonstration programmes, which include evaluation of acceptability, coverage, and practicality of implementation and of integration in existing programmes. However, information on costs of introducing the vaccine into the EPI is needed.

Methods: We assessed financial and economic cost of the HPV vaccine in the context of the first cycle of Demonstration programme in the district of Manhiça carried out in 2014 and estimated an alternative scenario for a reduced number of doses and personnel. Data collection followed a micro-costing approach and consisted of interviews with key informants at different administrative levels through the administration of standard questionnaires developed by the World Health Organization for the demonstration programmes.

Results: Considering only the data from the first cycle of vaccination (2014), which consisted in three doses, the average financial cost per Fully Immunised Girl (FIG) resulted in 31.93 US$ when no vaccine or cold-chain extra-cost were considered. Taking into account that during the second cycle (2015), the number of doses reduced to two, an alternative hypothetical case scenario based on modelling resulted in 21.35 US$ per FIG when no costs of vaccine, cold chain were considered and taking into account reduction of staff.

Conclusions: These costs are higher than the average costs seen elsewhere (ranging from 2.49 US$ in India to 20.36 US$ in Vietnam) but in line with recent similar programmes conducted in Tanzania and Vietnam. However, if Mozambique is to implement HPV vaccination targeted to 10 year old girls in schools in rural settings with minimal cold-chain requirements fulfilled, cuts should be made to personnel costs to make the intervention affordable: reduce the outreach team to one vaccinator and one teacher and correct the supervision visits and support to the team.
Measuring progress for safe motherhood: An overview of the issue
Filippi V.¹
¹London School of Hygiene and Tropical Medicine (LSHTM), London, UK

**Background:** The Sustainable Development Goals (SDG) recognized the importance of maternal mortality for development with a new target of reducing the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births by 2030. Attaining this rate will require a marked acceleration in annual progress (from 2.3% to 7.3%), and by extension in the implementation of safe motherhood activities. The context for maternal mortality reduction has changed over the past 10 years. Many more women access services, but disaggregation of information at the sub-national level reveals sometimes growing divergence, a phenomenon not always easily explained. Both perceived and technical quality of care are very important issues as more women access services, but it is difficult to measure comprehensively and to alter it. The epidemiology of maternal mortality has changed, with more deaths related to chronic diseases such as diabetes for example, but also more women surviving with sequelae. This require a different type of safe motherhood programming. There is also a growing emphasis on accountability to women and their community.

**Aim:** The objective of this presentation is to set the scene for the session, including presentations on maternal death surveillance and response, UON, how to make global indicators usable at local level, and signal functions for abortion.

**Method:** When introducing this section, I will therefore provide a brief historical overview of the indicators and monitoring approaches used so far in maternal health including their strengths and limitations. I will finish the presentation with an overview the opportunities ahead for generating relevant, reliable, and sensitive to change information, in order to facilitate decision making and action at the local level.
8OS4.2
Maternal deaths surveillance system: A tool to guide action at regional level in Morocco?
Abouchadi S.¹, Zhang W-H.², Englert Y.³, Nejjari C.⁴, De Brouwere V.⁵
¹Ecole Nationale de Santé Publique, Rabat, Morocco; ² School of Public Health, Université Libre de Bruxelles (ULB), Brussels, Belgium; ³ Hôpital Erasme, Laboratoire de Recherche en Reproduction Humaine, ULB, Brussels, Belgium; ⁴ Université Mohamed VI des Sciences de la Santé (UM6SS), Casablanca, Morocco; ⁵ Maternal and Reproductive Health Unit, Departement of public health, Institute of Tropical Medicine (ITM), Antwerp, Belgium

Introduction: The Global Strategy for Women's, Children’s and Adolescent Health, (2016-2030) launched in September 2015 aims to end all preventable deaths including maternal deaths by 2030. This requires improving the identification, measurement and quality of the data collected on maternal deaths. In Morocco, a nationwide maternal death surveillance system (MDSS) was implemented in 2009. So far, this system identifies about half of the estimated number of maternal deaths. However, the primary objective of the MDSS is to guide the decision at regional level by using maternal death review data for action. We have no information on the use of these data by regional decision makers.

Aim: This study aims to explore the perspective of stakeholders on MDSS and factors that influence the use of the maternal death data in regional decision-making in Morocco.

Methods: A mixed-methods case study design is being applied. Data collection will be conducted between May and June 2017. The study population are stakeholders who are closely involved in the MDSS (regional focal points of MDSS, regional confidential audit committee members) and various data users (Regional Health Directors, heads of public health services, and heads of regional health observatories). Twelve semi-directional structured interviews will be carried out with the regional focal points at the Regional Health Directions to assess the MDSS implementation level. Five in-depth interviews will be undertaken in 4 selected regions for understanding stakeholders’ perception of MDSS’s implementation and the utilization of MDSS for action. Data will be analyzed using a mixed approach including Epi Info and NVivo software (QSR International Pty Ltd. Cardigan UK).

Expected Results: The preliminary results of this study will be ready by the end of September 2017. This study will contribute to better understand the process of monitoring maternal deaths at the operational level and to identify barriers to the compliance with the national standards. The factors that influence the utilization of MDSS data could also be identified and the recommendation for optimal utilization will be developed.
Trend in unmet obstetric needs in rural Guinea from 2011 to 2016
Delamou A. 1,2, Delvaux T. 2, Camara B.S. 1, Sidibe S. 1,3, El Ayadi A.M. 4, De Brouwere V. 2
1Department of Public Health, Gamal University of Conakry, Conakry, Guinea; 2Institute of Tropical Medicine, Antwerp, Belgium; 3Centre national de formation et recherche en santé rurale de Maferinyah, Forécariah, Guinea; 4University of California, San Francisco, USA

Introduction: The concept of unmet obstetric needs (UON) gives an estimate of the gap between the expected major obstetric interventions (MOIs) required for absolute maternal indications (AMIs) in a given well-defined population (needs), and the actual delivery of these services to this population. Since 2011, Guinea has introduced free obstetric care policy in all public health facilities before its health system was hit by the 2014/2015 Ebola virus disease (EVD) outbreak.

Objective: To analyse the trend of unmet obstetric needs from 2011 to 2016 in rural Guinea

Methods: This is a retrospective cohort study with all women receiving obstetric care in seven maternities between January 2011 and December 2016 in Guinea. The study sites include five districts affected by the 2014/2015 Ebola outbreak (Kissidougou, Gueckedou, Macenta, Beyla and Lola) and two districts that were not (Labé and Mamou). Data will be analysed using Stata 13 software (Stata Corp, Texas, USA).

Results: Data collection is ongoing and will be completed in July 2017. Unmet obstetric needs (UON) will be used as an indicator to assess the capacity of the Guinean healthcare system to properly identify and manage life-threatening maternal conditions since the implementation of the free obstetric care policy. The effect of the Ebola outbreak will be assessed by comparing the trend of the UON indicator and the annual cesarean rate between districts that reported EVD cases and those that did not. In-hospital maternal and neonatal mortality will also be presented and compared.

Conclusion: The results will assess whether the use of UON indicator is still relevant for local decision makers. They will also help understand how sensible is this indicator to health issues such as the EVD outbreak.
Introduction: Provision of safe termination of pregnancy (ToP) services reduce maternal mortality, and all abortions whether spontaneous or induced, may require post-abortion care (PAC) services for complications.

Aim: We applied a newly proposed signal-function approach to assess progress in abortion care provision in Central Province, Zambia in 2016, and evaluated changes in component interventions over time, by comparing to secondary data from 2005. We also assessed proximity of the population to functional abortion services.

Methods: We conducted a census of all health facilities in Central Province using a structured questionnaire to measure signal functions for basic and comprehensive ToP and PAC services, including family planning (FP). We used data from the 2005 Zambian Health Facility Census to compare progress in staffing and FP availability since 2005. We linked our facility-based data to population census data using geographic information systems, calculated the proportion of women living within 5km and 15km of various types of abortion services, and compared this to 2005.

Results: In Central Province in 2016, 6% of facilities achieved the requisite criteria to be capable of providing basic ToP services, 5% comprehensive ToP, 4% basic PAC services, and 2% comprehensive PAC services. Capability was highest in hospitals. Availability of contraceptive commodities had increased since 2005, but staffing levels had not improved. Nearly 25% of women lived within 15 km of a facility capable of providing basic TOP. Comprehensive PAC services were virtually unavailable to rural populations.

Conclusion: Facility assessment data can characterize abortion services and highlight gaps in provision and coverage. We show that between 2005 and 2016, both facility capability and population access increased overall. However, we also show that lack of staffing and commitment to ToP provision hinders ability to provide services, with many more facilities providing PAC than ToP despite the latter being technically simpler. We were able to estimate the impact of various policy scenarios on access, such as requiring three medical doctors for non-emergency ToP (as required by a caveat in Zambian law), or adopting best international practices and allowing mid-level providers to provide services. The approach could be used for multi-country comparisons.
Strengthening the availability and quality of maternal health services by supporting the use of globally defined indicators at local level – Case study of Togo

Brun M¹, Monet J-P¹, Agbigbi Y², Schaaf M³

¹United Nations Population Fund, New York, USA
²United Nations Population Fund, Lomé, Togo
³Averting Maternal Death and Disability, Columbia University, New York, USA

Introduction: Since the Safe Motherhood Conference of Nairobi in 1987, strategies and indicators have been developed by the global health community to support countries improve coverage and quality of maternal health services. Emergency Obstetric Care (EmOC) services have been a particular focus with the development in 1997 of coverage indicators on EmOC¹ and an approach to assess the needs for EmOC services. However, thirty years after Nairobi and twenty years after the first EmOC Needs Assessment, most countries with high burden of maternal mortality are not able to monitor maternal and newborn health indicators.

Aim: Define an approach for countries to strengthen their national network of EmONC (Emergency Obstetric and Newborn Care) facilities and to set-up a system to continuously address gaps in availability and quality of services.

Methods: The approach is based on the lessons learned from countries in developing their EmONC facility network, particularly Haiti, Togo, and Burundi. Planning and implementation challenges have been identified through quantitative and qualitative analysis of the results of EmONC Needs Assessments of 18 countries.

Results: Countries with high burden of maternal mortality typically have a number of designated EmONC facilities which is two to four times higher than the minimum recommended standard². This gap reflects a ‘planning problem’ that hampers the capacity of countries to have functioning EmONC facilities as their scarce resources are spread across too many facilities. In most high burden countries, the number of functioning EmONC facilities corresponds to about 20% of the recommended standard. This gap reflects an ‘implementation problem’. The proposed approach supports countries address these problems by ensuring the strategic selection of EmONC facilities, the regular analysis of key indicators, and the empowerment of local staff to address gaps. Applied in Togo, this approach has contributed to the deployment of midwives in Basic EmONC facilities and almost doubled the number of functioning EmONC facilities in a 3-years period.

Conclusion: Building on the experience of countries and leveraging Geographic Information System (GIS) and principles from ‘implementation research’, this innovative approach for EmONC development can help countries improve the availability and quality of maternal and newborn health services.

References:
2. Minimum recommended standard of 5 EmONC per 500,000 population. While this standard has been empirically defined in the early 90s, our analysis shows that it is a useful reference for countries when planning their EmONC facility network.
Maternal morbidity measurement tool: Pilot study results
Barreix M.¹, Barbour K.², Cecatti G.³, Chou D.¹, Costa M.L.³, Filippi V.⁴, Hindin M.⁵, Kalamur, A.⁶, Petzold M.⁷, Say L.¹, Tunçalp Ö.¹

¹ Department of Reproductive Health and Research, World Health Organization, Geneva, Switzerland; ² Department of Obstetrics/Gynecology, University of Utah, Salt Lake City, UT, USA; ³ Centro de Pesquisas em Saúde Reprodutiva de Campinas, Campinas, SP, Brazil; ⁴ Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, UK; ⁵ Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; ⁶ PSI, Washington, DC, USA; ⁷ Center for Applied Biostatistics at Sahlgrenska Academy, University of Gothenberg, Gothenberg, Sweden

Background: The international community has led concerted efforts to reduce maternal mortality; however, global attention is shifting from merely surviving pregnancy and childbirth to ensuring women are thriving throughout their life course. To reach the Sustainable Development Goals (SDGs), much remains to be done in order to lessen the harmful consequences related to pregnancy and childbirth. Though successful efforts led to defining and measuring maternal near-miss complications, large gaps in knowledge regarding maternal morbidity remain. There is currently neither a uniform nor a universally accepted way to define, identify or monitor non-severe maternal morbidities.

Aims: The pilot study sought to assess the feasibility, acceptability and utility of a comprehensive, but compact instrument to measure maternal morbidity at the primary health care level.

Methods: A cross-sectional study was conducted in 3 countries, Jamaica, Kenya, and Malawi in late 2015 – early 2016. Sites included 9 facilities in Jamaica, 3 in Kenya and 1 in Malawi. A convenience sampling strategy was utilized.

Results: Interviews were conducted with 1490 women (750 women for antenatal care, ANC, and 740 for post-partum, PPC). In expanding the definition of morbidity, the tool sought to document factors impacting the woman’s experience of pregnancy. When including IPV and mental health diagnoses, the majority of ANC women (53.7%) and slightly more than one third (34.0%) of PPC women presented with at least one diagnosis (or morbidity) of any kind. Of those ANC women with morbidities, 22.1% of their diagnoses were characterized indirect conditions, while 18.5% were of indirect conditions (IPV was kept as a separate diagnosis group). This pattern was also observed in Jamaica and Kenya where indirect conditions (34.8% and 20.5% respectively), represented the largest burden; whereas in Malawi, direct conditions (26.8% of diagnoses) were more prevalent.

Conclusions: The tool focused on describing non-severe maternal morbidity in a manner that highlights the women’s experience of pregnancy, incorporating self-reported factors that contribute to her morbidity, while incorporating a clinical perspective through the skilled provider’s diagnoses. This more holistic approach to morbidity provides a basis for advocacy for women’s health and rights in the broader context.
Maternal morbidity measurement: Roadmap for the next 5 years
Barreix M.1, Barbour K.2, Cecatti G.3, Chou D.1, Costa M.L.3, Donnay F.4, Filippi V.5, Firoz T.6, Petzold M.7, Say L.1, Tunçalp Ö.1 von Dadelzen P.8

1 Department of Reproductive Health and Research, World Health Organization, Geneva, Switzerland; 2 Department of Obstetrics/Gynecology, University of Utah, Salt Lake City, UT, USA; 3 Centro de Pesquisas em Saúde Reprodutiva de Campinas, Campinas, SP, Brazil; 4 Independent Consultant, Brussels, Belgium/Seattle, WA, USA; 5 Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, UK; 6 Department of Medicine, Brown University, Providence, RI, USA; 7 Center for Applied Biostatistics at Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; 8 Department of Obstetrics and Gynaecology, St. George’s University, London, UK

Background: Improving maternal health and reducing related mortality have been key concerns of the international community as one of the eight Millennium Development Goals (MDG 5). Despite being referred to as an iceberg where maternal deaths are the tip and morbidity the large base, this analogy is linear in its interpretation of maternal health and does no capture the true nuances associated with maternal morbidity and its measurement. There remains a great knowledge gap regarding the impact of maternal morbidity on women and its consequences beyond the post-partum period.

Aims: Present and discuss new non-linear conceptualization of maternal morbidity and its implications.

Methods: WHO’s Reproductive Health and Research Department established a technical working group, the Maternal Morbidity Working Group (MMWG) to lead the research and conceptualization of maternal morbidity. The MMWG is composed of obstetricians, physicians, midwives, epidemiologists, medical anthropologists, public health professionals and patient advocates from high-, middle- and low-income countries. Over the past four years, the MMWG has met 7 times and advanced research on maternal morbidity, on the basis of existing evidence and systematic reviews, and agreed upon a concept of and common framework for maternal morbidity.

Results: There is consensus that (1) the concept of maternal morbidity is not, as it is so often depicted, linear and a re-imagining of it is necessary; (2) a life long perspective is needed. The MMWG strives to, in the future, develop a composite score of maternal morbidity, encompassing markers of physical and social health, and functioning. Measuring functioning, includes thinking beyond the physical to considering the environment. Based on this comprehensive approach, women with poor scores could be followed more carefully, presenting a new, different and comprehensive approach to maternity care, especially of post-partum care.

Conclusions: Accurate and routine measurements of non-severe maternal morbidity are necessary to inform policy and program decisions and resource allocations that will also help reducing maternal deaths, and long-term suffering and disability. As a parallel line of work more research is needed to help define maternal functioning, including:

- What is the “normal” pregnancy and post-partum experience?
- What is the cut-off for what an abnormal experience?
- How does this concept and cut-off change over the course of pregnancy?
Improving detection and initial management of gestational diabetes through the primary level of care in Morocco

Utz B.1, Assarag B.2, De Brouwere V.1
1Dept. of Public Health, ITM, Antwerp; 2Ecole Nationale de Santé, Rabat, Morocco

Introduction: In Morocco screening for gestational diabetes and the initialization of its treatment face various obstacles including gaps in provider knowledge, delays related to blood testing or to specialist referral1.

Aim: To evaluate the implementation of a strategy aiming at the detection and initial management of gestational diabetes during antenatal consultation through the first level of care.

Methods: We conducted a hybrid effectiveness-implementation design in the form of a cluster randomized trial in Marrakech and Al Haouz districts. 10 health centres with at least 30 or more antenatal care consultations a month were randomly selected in each district with 5 being randomized into the intervention group and 5 serving as controls. By comparing active screening and treatment initiation through first line health facilities with existing practices in the control facilities, the investigators will explore the effect of the intervention on birth weight and assess GDM prevalence at the first level of care. Furthermore, the acceptability of screening and initial management of GDM through first line health services by both providers and pregnant women with GDM and the impact of the different screening approaches on the lifestyle of affected mothers will be evaluated using mixed methods. A cost-effectiveness analysis will complement the picture.

Results: Our intervention indicates that GDM prevalence particularly in urban settings in Morocco is high and reaches already 20%. Although data collection is still ongoing, preliminary results underline that screening and initial management through the primary level of care is a feasible and accepted strategy. However, more detailed findings will be presented in October.

Conclusion: A high prevalence of gestational diabetes in Morocco requires the involvement of the primary health care level in its detection and treatment.

Reference:
Severe maternal morbidity at the time of delivery and in the postpartum in Morocco: Magnitude, causes and consequences
Assarag.B.1, Essolbi.A.1 De Brouwere.V.2
1National School of Public Health, Rabat, Morocco; 2Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium;

Introduction: In Morocco, there is little information on the circumstances and consequences of maternal near misses.

Aim: To improve our understanding of the magnitude of maternal near miss complications and to identify the determinants and consequences of these complications around childbirth and in the postpartum period in Morocco, we conducted two complementary studies.

Methods: The first one was a case-control study and second was a prospective cohort. All women were recruited at the three referral hospitals of Marrakech and Al Haouz. We included all cases of maternal near misses (80 women) detected during the six months, with two comparison groups, for the first study it was 219 women who had the same types of complications as the near misses but who did not reach the stage of near miss. For the second study, it was 188 unexposed women with normal deliveries.

Results: The incidence of maternal near misses was 12‰ hospital births. Hypertensive disorders (45%) and severe bleeding (39%) were the categories that most frequently caused the near misses cases. The risk factors occurring in the near miss episodes were a low level of education, a lack of monitoring during pregnancy and having experienced complications during pregnancy. Regarding delays in support, women who waited for more than 24 hours before looking for care had an eight times higher risk of experiencing a near-miss episode. Similarly, women who waited for more than 60 minutes at the top-level structures showed four times greater risk. Eight month later in the postpartum period serious complications were higher among women who had experienced a near-miss complication (22%) compared to women with an uncomplicated delivery (6%) (p = 0.001). The risk of depression was significantly higher among the near-misses with perinatal death [OR=7.16; 95% CI: (2.85-17.98)] than women with normal delivery. Interviews revealed that the economic burden of near-miss care contributed to social problems, disturbances among the women and their households.

Conclusion: Women with serious obstetric complications and their newborns have a greater chance of successful outcomes in delivery and in the long term if they are immediately directed to a functioning referral hospital and if the providers are responsive.

References:
The atlas of maternal morbidity: A systematic review of systematic reviews
Giorgia Gon¹, Andreia Leite¹, Susannah Woodd¹, Clara Calvert¹, Wendy J Graham¹, Veronique Filippi¹
Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, UK

Background: Current global estimates of maternal morbidity account for a small range of maternal conditions, and hence are likely to be underestimates. WHO recently published a comprehensive list of maternal morbidities including 121 direct and indirect conditions.

Aims: We performed a systematic review of reviews of maternal conditions in the WHO list, with the following objectives. First, to make available the most up-to-date frequency estimates. Second, to identify which conditions do not have reliable estimates available an. Third, to scrutinise the quality of systematic reviews.

Methods: We conducted a systematic search in three datasets, EMBASE, MEDLINE and CINHAL in July 2016 combining terms for pregnancy, frequency of disease, publication type, and specific terms for each of the 121 conditions. We assessed quality with a modified version of the overview quality assessment questionnaire. We present the frequency of the outcomes with their uncertainty ranges descriptively by condition, region, pregnancy period, diagnostic tools, and population source.

Results: Out of 11930 initially found, 54 articles were selected from which we extracted 31 direct and 82 indirect frequency estimates. 74% of conditions in the WHO list did not have a systematic review available, whilst some conditions had several (depression, diabetes). We found substantial direct maternal morbidity spans beyond the time of birth, with gestational diabetes ranging from 5% to 25% of pregnancies. There is a large range of mild and severe indirect morbidity among women postpartum, for example, up to a third of pregnancies are affected by urinary incontinence in high income countries. There were several gaps in the quality of the studies. Two third of systematic reviews on direct obstetric complications include hospital based studies in their estimation of prevalence or there was insufficient information to assess whether this was done. For 20% of reviews there was insufficient information on the appropriateness of diagnostic criteria for the condition of interest.

Conclusions: Several maternal conditions do not have a systematic review available. The quality of systematic reviews on the frequency of maternal conditions could be improved if existing guidelines on to how carry out these reviews were followed. Stricter inclusion criteria should be used concerning diagnostic criteria and population based data.
8OS6.1
Social inclusion of children with special needs in Uganda – A photovoice study
Masquillier C.¹, Musoke, D.²
¹Department of Sociology, University of Antwerp, Antwerp, Belgium; ²School of Public Health, Makerere University, Kampala, Uganda

Introduction: Approximately 13% of the Ugandan children are living with some form of disability. Promoting inclusive societies for children living with a disability has been recognized to be the cornerstone of disability policies in the international, but also in the Ugandan context. However, previous research has demonstrated that when it comes to implementing such inclusive programs and allocating adequate resources many African countries, such as Uganda, lag behind. There is a clear research need to investigate how children with special needs are included in different activities in the Ugandan society.

Aim: Not only in society, but also in research children with special needs and their parents need to be included. In this respect, photo voice will be used to investigate how children with special needs are included in society and which barriers exist.

Methods: In the photo voice method, parents themselves produce visual representations about aspects of their children’s life with regard to social inclusion and its barriers. These images are the visual stimuli in a subsequent in-depth qualitative interview with the respondent who produced that particular visual material. Fieldwork will be conducted in collaboration with researchers from Makerere University. Respondents will be recruited in collaboration with the Angel’s Centre, which is a non-governmental organization, located in Wakiso district, in the central region of Uganda.

Results: In theory the visual interview offers a number of specific benefits for this context, in comparison to the purely verbal interview (e.g. empowering for participants; providing insider’s perspective; engaging and improving communication with those who have little education). This presentation will reflect on whether the advantage of this methodology – as outlined in the literature – holds true for this context and research. This presentation will also provide a critical reflection on the methodology used.

Conclusion: This presentation will illustrate how photo voice can be used as a methodology to plug a gap in the understanding of social inclusion of children with a disability and its barriers in resource limited settings.

8OS6.2
Ships of Hope; Mobile boat clinics in the riverine areas of Assam (C-NES)
Radhika Arora¹, Madhavi Misra ¹ and Black Ticket Films²
¹ Public Health Foundation of India, Delhi NCR, India; ² Independent film production company, Delhi NCR, India

Introduction: The film focuses on the issue of access and availability of healthcare services faced by populations living on remote islands in the East Indian state, Assam. Getting to-and-from the island to the mainland can take from a few hours to more than a day, with access severely curtailed during poor weather conditions and over the monsoon months. Many people on the islands had never seen a doctor until a mobile boat clinic intervention was started by the Centre for North East Studies and Policy Research, under the National Rural Health Mission. At the time of filming, in 2011, these mobile boat clinics provided primary and maternal healthcare services to the populations living on the islands.

Aim: This film aims to document as a case study the innovative use of mobile boat clinics in addressing the issue of physical access to health services, and to demonstrate the use of film as a medium for case study development for teaching medical professionals, health systems researchers, among others.

Methods: Review of the literature, interviews, short documentary film and print case study

Results: As a teaching tool the case study (film) served as a powerful medium to present multiple perspectives on a health system challenge. It served to bring alive the voices of beneficiaries, providers (doctors, nurses and others), along with the broader policy perspectives on (a). challenges of accessing health services from the perspective of beneficiaries; (b). challenges of providing health services in remote areas; (c). use of innovative, locally acceptable challenges to strengthen health care delivery systems. The film format allowed us to present the context of the issue in a more engaging way, and participants to our workshop found the case method of teaching, as well as the use of film very engaging and useful in understanding the subject matter.

Reference:
8OS6.3

Making despair and hope visible
Soors W.1, Bhojani U.2
1Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium; 2Institute of Public Health, Bangalore, India

Introduction: Social exclusion is a major obstacle to health and wellbeing, particularly so among vulnerable populations. For health systems to effectively respond to the health needs of people belonging to vulnerable populations, an approach is needed that reaches beyond the health sector, to redress exclusion at large. A necessary first step in constructing such Health-in-All policy is raising consciousness and increasing knowledge on the lived realities of vulnerable populations.

Aim: To give voice to vulnerable people who experience social exclusion and to make a case for a Health-in-All approach to redress exclusion.

Methods: Long-term engagement of the Institute of Tropical Medicine (ITM, Antwerp) and the Institute of Public Health (IPH, Bangalore) in research with tribal communities in South India (Karnataka, Tamil Nadu and Kerala) established a relationship of mutual trust. This provided the opportunity for tribal leaders to voice their experience and, subsequently, for the researchers to document this experience on film.

Results: In this presentation, two clips (3+2 minutes) from the documentary ‘Health in All and the tribal population in South India’ (Soors, Bhojani, Vermeiren & Desmet) will be screened that illustrate both the despair and hope of tribal people in their experience with social exclusion. In parallel, a ‘making-of’ series of photos from the production of the documentary will be exhibited to the general audience of ECTMIK 2017. Attendants are invited to view the full documentary at their convenience.

Conclusion: Respectful long-term engagement with vulnerable populations allows sharing otherwise silenced experience with the general public, researchers and policymakers. This in turn can lead to the development of effective Health-in-All policies.

Reference:

8OS6.4

River of Hope
Ary Rogerio Silva1
1Advisor Communication & Public Information – Pan American Health Organization; International Development – Global Affairs Canada and the Government of Colombia

Introduction: Bringing health to the indigenous communities of the Orinoco region in the Amazon of Colombia. The communities of Vaupés and Vichada are characterized by having the largest amount of indigenous population with a large number of communicable diseases, difficulties of geographical access and access to health services. For that reason, the Pan American Health Organization, the International Development – Global Affairs Canada and the Government of Colombia decide to work together to improve the health care of this population. Within the project, volunteers have been trained in each community, to take care of the infants with an integrated evaluation with weight, height and their development. Also, to improve knowledge of ethnic distribution, strengthen community-based care units, empowerment of women as leaders, increasing prenatal consultation reaching almost 70% in Vaupés. Also, screening for cervical cancer and other diseases recollecting data to better decide on how to improve primary health care for this population.

Aim: To produce a documentary showing how to improve health and expand protection for women, children and excluded, vulnerable populations against communicable diseases

Methods: Recollecting data on this particular indigenous population in Colombia on communicable disease and with this information to improve primary health care and quality of life for this communities.

Results: The final results show how the population can participate and empowered to have a better health service care on their communities.

Conclusion: The goal of this project is to improve the health and increase protection from communicable diseases for women, children and excluded populations in situations of vulnerability. This was achieved by the strengthening health systems based in primary health care for children and excluded populations with a specific focus on women and girls and by increasing efficiency and effectiveness of Pan American Health Organization to carry out its technical cooperation mandate especially in the area of gender equality.
Victim testimonies for tobacco control advocacy
Bhojani U.¹
¹Institute of Public Health, Bangalore, India

Introduction: In India, tobacco use accounts for about 3,500 deaths a day. Tobacco control measures face fierce resistance from the tobacco industry, understandably so as India is the third major tobacco producer after China and Brazil. In such contexts, where governments have a vested interest in tobacco trade, strong and innovative approaches are needed to bring tobacco control to the fore.

Aim: Effective advocacy for tobacco control at policy level.

Methods: Under the auspices of the National Rural Health Mission (NRHM), the Ministry of Health and Family Welfare (MoHFW) and the National Tobacco Control Programme (NTCP), a series of short videos (30 seconds duration) were produced containing testimonies of tobacco victims.

Results: In this presentation, two 30-second testimonies will be screened. These and other victim testimonies were used to sensitize the public at large on the need for tobacco control – airing the videos on national television within a NRHM/MoFHW/NCTP advocacy campaign – and in personal contacts with policymakers and law enforcement officers.

Conclusion: Short films containing individual tobacco victim testimonies were effective both in raising general awareness about tobacco harm and in influencing policymakers to prioritize tobacco control.
Introduction: Many treatments have been tried for Cutaneous Leishmaniasis (CL), but few if any can be confidently recommended as effective, safe and acceptable. CL is a visible disease and the patients’ requirements in terms of treatment and treatment effects are important, but patients’ needs are rarely considered. We sought patients’ opinions on many aspects of their disease via individual semi-structured interviews.

Aim: We describe the protocol and selected results of an international study aimed at understanding CL patients’ disease experience.

Methods: The in-depth interviews, following a collaboratively developed topic guide and protocol, explored patients’ overall disease experiences, symptoms and treatments, as well as the cultural and social context, expectations, preferences, and concerns. Participants were selected based on a purposive, maximum variation sampling approach along a defined patient spectrum covering e.g. Leishmania species, age and gender, and clinical presentation. Individual semi-structured interviews were conducted with 75 patients with confirmed CL at 8 sites in 7 countries (Brazil, Burkina Faso, Colombia (two sites), Iran, Morocco, Peru and Tunisia) in their mother tongue, after obtaining their consent. Thematic analysis of translated transcripts was conducted.

Results: Results that will be presented are focussing on preferred treatment outcomes of patients across all regions. Among the outcomes reported by patients, aesthetic aspects like closed lesions and the absence of scars were considered as very important, particularly by women, and depending on the cultural context. Among other desired outcomes mentioned were parasitological cure, absence of pain, and of sequels affecting internal organs or fertility. The presentation will explore underlying issues and concepts. In addition, Colombian soldiers’ experiences will be presented and will highlight the patients’ perspective of a structured programme for a specific population.

Conclusion: The study results provide a rich insight into preferred outcomes for CL treatments, as well as related topics, from the perspective of an international patient population.
Access and economic impact of cutaneous Leishmaniasis in Colombian patients: A qualitative study


Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM), Cali, Colombia; EDCTP/TDR Fellow, European Vaccine Initiative, Heidelberg, Germany; Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Oxford, UK; Dept. Enf. Infecciosas, Dermatológicas y Tropicales, Hospital Cayetano Heredia (HCH), Lima, Peru; Facultad de Medicina, Universidad Peruana Cayetano Heredia; Centro de Pesquisa René Rachou, Fundação Oswaldo Cruz (FIOCRUZ), Minas Gerais, Brazil; Programa de Estudio y Control de Enfermedades Tropicales (PECET), Universidad de Antioquia, Medellín, Colombia; UNICEF/UNDP/World Bank/WHO Special Programme for Research & Training in Tropical Diseases (TDR), Geneva, Switzerland

Introduction: Treating cutaneous leishmaniasis (CL) often involves the administration of parenteral antimonial drugs which may cause side effects and have a negative impact on daily activities. Additionally, access to treatment in rural and/or remote endemic areas remains a challenge due to multiple economic, social and geographic barriers.

Aim: To explore patients’ perceptions about access and socio-economic impact of disease and treatment on everyday life, in order to inform improvements in case management.

Methods: A qualitative study using semi-structured in-depth interviews was conducted with patients with confirmed CL at two sites in south-west Colombia (Cali and Tumaco), as part of an international multicentre project exploring disease experiences in CL patients. Participants were selected based on a purposive, maximum variation sampling approach along a defined patient spectrum covering e.g. Leishmania species, age and gender, and clinical presentation. All patients provided informed consent. We conducted thematic analysis of translated transcripts using a coding framework developed collaboratively and facilitated by NVivo® software. This analysis focussed on elements related to everyday life with CL and related topics, including treatment accessibility, costs and impact of disease in salary, employment and relations with others.

Results: A total of ten patients at different status of treatment were enrolled (seeking treatment, during and after treatment). Reported antileishmanial treatments included miltefosine (3 patients) and meglumine antimoniate (6 patients). Ages ranged between 18 and 52 years, and patients were predominantly men (8/10). All patients identified important impacts on their lives related to the disease including work loss and costs for transportation to seek diagnosis and treatment, limitations on daily activities related to treatment side effects, and having to spend time away from home while receiving treatment. Support from family and friends were also identified as strategies to cope with these issues.

Conclusions: This study highlights the considerable impact of CL on patients’ lives which is not only related to the clinical presentation but also to delivering a parenteral treatment over time. These perspectives should be considered when developing drugs and strategies for drug delivery.
Assessment of the quality of life and economic impact of cutaneous Leishmaniasis in Brazil: An exploratory approach

Cota G.F.¹, Castro M.M.², Martínez D.Y.³, Lóp³, Erber A.⁶, Plugge E.⁶, Olliaro P.⁶,⁷, and the Patient Experiences Collaboration – Cutaneous Leishmaniasis (PEC-CL)

¹Centro de Pesquisa René Rachou (CpqRR), Fundação Oswaldo Cruz-FIOCRUZ, Belo Horizonte, Minas Gerais, Brazil; ²Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM), Cali, Colombia; ³Dept. Enf. Infecciosas, Dermatológicas y Tropicales, Hospital Cayetano Heredia (HCH), Lima, Peru; ⁴Instituto de Medicina Tropical Alexander von Humboldt, Universidad Peruana Cayetano Heredia, Lima, Perú; ⁵Programa de Estudio y Control de Enfermedades Tropicales (PECET); ⁶Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Oxford, United Kingdom; ⁷UNICEF/UNDP/World Bank/WHO Special Programme for Research & Training in Tropical Diseases (TDR), Geneva, Switzerland

Introduction: Although cutaneous leishmaniasis (CL) is a widespread public health problem, few studies have examined its impact on patients’ quality of life and economic aspects from the patients’ perspective.

Aim: to understand the impact of CL on the economic, social and emotional domains from a patient’s perspective.

Method: Ten CL patients participated in-depth semi-structured interviews, as part of an international multicentre project exploring disease experiences in CL patients. Demographic, social, economic and treatment related information was collected using a contact summary form. Thematic analysis of interviews was performed and facilitated by NVivo® software. A descriptive analysis of demographic data, expenses and time spent in treatment was performed using SPSS software.

Results: Five men and five women with median age of 41 years, treated with antimonials participated. All patients reported economic impacts resulting from disease, with additional costs estimated to be 40-131 USD, mainly related to transport and proportional to the distance between home and the health center. Median time from disease onset to the end of treatment was 6 months; activities related to the diagnosis and treatment consumed approximately 50 hours and generated 10 medical visits per patient. Eight patients were professionally active at the time of the onset of CL and six of them reported income reduction. Most reported missed workdays due to medical appointments and treatment visits. The curiosity of relatives and friends regarding the skin lesions made participants feel uncomfortable. Several participants reported feelings of fear and shame. Fear was related to the lack of information about the evolution of the disease. Seven patients suffered from treatment adverse events and eight patients considered that inadequate quality and organization of the healthcare system contributed to CL having a negative impact on their life.

Conclusion: CL clearly has a negative impact on affected individuals. Decentralization of specialized health care would be likely to reduce costs on individuals and the dissemination of basic information about CL could also reduce some of the negative impacts.
Social and economic impact of cutaneous Leishmaniasis in Peruvian patients: A qualitative study
Martínez, D.Y.1,2, Erber A.3, Huerta G.S.2, Cota G.F.4, Castro M.M5,6, López L.7, Plugge E.3, Olliaro P.3,8; and the Patient Experiences Collaboration – Cutaneous Leishmaniasis (PEC-CL)
1Dept. Enf. Infecciosas, Dermatologicas y Tropicales, Hospital Cayetano Heredia (HCH), Lima, Peru; 2Facultad de Medicina, Universidad Peruana Cayetano Heredia; 3Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Oxford, UK; 4Centro de Pesquisa René Rachou, Fundação Oswaldo Cruz (FIOCRUZ), Minas Gerais, Brazil; 5Centro Internacional de Ensenamiento de Investigaciones Médicas (CIDEIM), Cali, Colombia; 6EDCTP/TDR Fellow, European Vaccine Initiative, Heidelberg, Germany; 7Programa de Estudio y Control de Enfermedades Tropicales (PECET), Universidad de Antioquia, Medellín, Colombia; 8UNICEF/UNDP/World Bank/WHO Special Programme for Research & Training in Tropical Diseases (TDR), Geneva, Switzerland

Introduction: Cutaneous leishmaniasis (CL) affects mostly people from the lowest socioeconomic strata in endemic areas, producing huge economic and social stress although the Peruvian National Program for Leishmaniasis Control provides treatment for free. However the exact socio-economic impact remains poorly researched.

Aim: This study aimed to explore direct and indirect costs incurred by patients with CL when seeking and undergoing diagnosis and treatment, to inform the development of a questionnaire to assess the economic impact of CL in a future study, whose protocol will be presented also, aiming at identifying the economic barriers to adequate treatment.

Methods: A qualitative study based on semi-structured interviews of patients with confirmed CL at the leishmaniasis clinic at the Hospital Cayetano Heredia, Lima, Peru. This study forms part of an international multicentre project that explored disease experiences in CL patients. Participants were recruited using a purposive, maximum variation sampling approach along a defined patient spectrum covering e.g. Leishmania species, age, gender, and clinical presentation. A collaboratively developed topic guide was used to conduct the interviews. We conducted thematic analysis of translated transcripts using a coding framework and facilitated by NVivo® software.

Results: A total of eight adult patients either on or after CL treatment were enrolled. First-line therapy as per National Guidelines is parenteral sodium stiboglucconate (20mg/kg/day) in 20 doses. Participants were mainly men (6/8), aged 26-69 years. The main direct and indirect costs they reported were healthcare-associated costs before and during standard treatment (seeking diagnosis and treatment, during and after therapy), loss of work opportunities and salary, and other expenditures during the therapy (accommodation, transportation, and other additional expenses at their homelands, e.g. housekeeper, farm keeper, nanny). Additionally, patients reported discrimination from community members concerned that they could transmit the infection.

Conclusion: The interviews provide a rich insight into the social and economic costs incurred by CL patients and will inform further research into the economic impact of CL in Peruvian patients.