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Population-wide administration of single dose rifampicin for leprosy prevention in isolated communities: a feasibility study in Indonesia

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INTRODUCTION Leprosy is an infectious disease caused by *Mycobacterium leprae*. Indonesia ranks third in the world in terms of leprosy burden. Chemoprophylaxis is effective in reducing the risk of developing leprosy among contacts. 'Blanket approach' is an operational strategy for leprosy post-exposure prophylaxis in which all members of an isolated community, high endemic for leprosy are screened and given a single dose of rifampicin (SDR) if negative for leprosy.
AIM To assess the feasibility and effect of a population-wide 'blanket' administration of SDR for leprosy prevention in isolated communities on an Indonesian remote island.
METHODS Three rounds of surveys were conducted in November 2014 (screening for all + SDR for all), 2015 (screening for all + SDR for earlier left ones) and 2016 (screening for all) in Lingat village of Selaru Island, Indonesia. The demographic and clinical data were used for a descriptive analysis of the intervention coverage and leprosy epidemiology.
RESULTS In the first two rounds of surveys, 1743 (92%; n = 1900) individuals were listed, 1671 (88%) screened, 1499 (79%) received SDR, and 213 (11%) were excluded based on the exclusion criteria. Of those screened, 43 (2.6%) were diagnosed with leprosy with a rate of 2263 per 100 000 population (n = 1900). Their mean age was 32 years, and 37% were female. The prevalence was highest in the age groups 15–24 and 25–49 years (4.7% and 4.6%). In total, 14 (33%) cases had MB and 29 (67%) PB leprosy. Two cases (5%) had grade 2 disability. In the third round, more than 1500 people were screened and 171 people remained untracked, whereas 10 new leprosy cases were detected (NCDR 50/10 000), with equal distribution, i.e. 5 PB & 5 MB.
CONCLUSION The study shows that the blanket approach of chemoprophylaxis is feasible and can be implemented in similar locations and sociocultural settings. There is no evidence yet regarding the number of rounds required to interrupt the leprosy epidemic and the desired time interval between rounds. Contingency plans need to be made to actively follow this village closely in the coming years and continue leprosy elimination efforts until no new cases are found any more.

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The development of an application for digital recording of DiTECT-HAT study participant data, including macroscopic and microscopic images

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INTRODUCTION Participants for the EDCTP DiTECT-HAT study (www.ditect-hat.eu) on diagnostic procedures in human African trypanosomiasis (HAT) are recruited in rural health centres in Côte d'Ivoire, the Democratic Republic of the Congo and the Republic of Guinea. Quality assurance is challenging because rapid diagnostic tests (RDT) used for screening need to be read within 25 min and because diagnostic confirmation relies on visualising live trypanosomes under the microscope. These preparations cannot be kept for rechecking. Our aim was to use digital technology both for recording case report forms (CRFs) in the field and for assuring quality of diagnostic procedures.
METHODS We developed an Android 5 compatible application for data entry at the field sites with a personal digital assistant tablet. The application also allows taking pictures of the RDTs with the tablet camera and recording 4 seconds videos with a versatile camera mounted on an ordinary microscope. Confidential participant data are encrypted and transferred via Wi-Fi connection to a network associated server (NAS). Pictures and videos are automatically uploaded separately and have a link to the corresponding record in their filenames. The combined cost of tablet and camera is approximately 600 EURO.
RESULTS AND DISCUSSION The application will be implemented from April 2017 onwards. Results will be presented during the conference. This kind of technology is readily available, is relatively cheap and could also be used for quality assurance in routine HAT case finding programs.
CONCLUSION Quality assurance of microscopy and other diagnostic procedures for HAT through digital applications is feasible and affordable.

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Diagnostic tools for human African trypanosomiasis elimination and clinical trials

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INTRODUCTION *Trypanosoma brucei gambiense* human African trypanosomiasis (HAT) is a neglected tropical disease targeted for elimination. Integration of diagnosis and case management into the general health system, monitoring of eliminated foci and development of safe and efficacious drugs, remain important challenges.
AIM To deliver new, cost-effective diagnostic algorithms for *gambiense*-HAT elimination.
METHODS For passive case detection, the performance and cost of rapid diagnostic tests (RDT) performed on clinical suspects in peripheral health centres is determined. On dried blood spots (DBS) of RDT positives, molecular and serological reference testing is conducted. Cost-effective diagnostic algorithms with high positive predictive values might open possibilities for treatment without the need for parasitological confirmation. For post-elimination monitoring, health workers performing house to house visits in low prevalence HAT foci collect DBS and send them to regional HAT reference centres for analysis. The feasibility and cost of diagnostic algorithms with RDTs, serological and/or molecular DBS tests are determined to establish an appropriate threshold to trigger active case finding and avoid HAT re-emergence. For early test-of-cure assessment in clinical trials, the accuracy of neopterin and RNA detection is studied. Earlier treatment outcome assessment will speed up

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drug development for HAT, and improve management of relapses in routine.
RESULTS Training of health personnel has taken place in spring 2017, followed by study initiation in West and Central Africa. An update of activities and experiences of the project is presented. The latest project news can be followed on www.d itect-hat.eu.
CONCLUSIONS This EDCTP funded project will provide evidence to support policies for improved HAT diagnosis and patient management within a context of disease elimination, and will contribute to successful HAT elimination.

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Visceral leishmaniasis cases in the non-endemic districts: challenges to ongoing elimination programme in Nepal

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INTRODUCTION Visceral leishmaniasis (VL) is endemic in 12 districts in the south eastern plain of the *Terai* (lowlands) in Nepal. The country has achieved the elimination target at district level and sustained the situation for the past 4 years. Recently, changing epidemiological pattern has been observed with new foci are emerging and cases reported from the non-endemic areas are increasing. In early 2014 and 2015, we visited the villages of non-endemic districts, chosen on the basis of reported cases, in order to collect epidemiological, entomological and microbiological evidence for local transmission.
AIM Proof of local transmission of *Leishmania donovani*.
METHODS House-to-house inventory of VL history was done in the villages that report VL cases in six districts considered hitherto non-endemic for VL. Case-control study (1:4) was conducted, focusing individual questionnaire, professional activities and travel history. Sandflies were captured using CDC light traps and mouth aspiration in houses and cattle sheds. Blood sample was taken from individuals aged ≥2 year. The blood samples were tested by direct agglutination test for the presence of *Leishmania donovani* antibodies. PCR was used to detect *Leishmania* in blood samples and captured insects.
RESULTS The survey documented 46 VL cases retrospectively including one new active VL case, of which 21 (45.7%) occurred within the last 2 years. Of the 46 confirmed VL cases, seven were children (<14 year) without travel history to known VL endemic areas. We found that many residents had been infected without VL; 40/16 (9.6%). Age and sex matched case-control study showed that exposure to known VL endemic areas was not a risk factor for VL, but having a VL case in neighbourhood was. We captured sandflies *Phlebotomus argentipes*. *Leishmania donovani* was confirmed in asymptomatic individuals as well as in captured sandflies.
CONCLUSION Epidemiological, entomological and molecular evidences have demonstrated there is ongoing local transmission of *Leishmania donovani* in the studied villages of non-endemic district. The VL elimination initiative should therefore consider extending its surveillance and disease control measures to these areas in order to ensure VL elimination in Nepal.

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Epilepsy perceptions and experiences of different stakeholders prior to the implementation of an epilepsy treatment programme in an onchocerciasis endemic region in Ituri, Democratic Republic of the Congo (DRC)

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INTRODUCTION Recent surveys in villages in onchocerciasis endemic regions in the DRC (Bas Uéle, Tshopo and Ituri) showed a prevalence of epilepsy 5–10 times higher than in most other non-onchocerciasis endemic regions in Africa. These surveys revealed that the majority of the persons with epilepsy were not treated. In Africa epilepsy case management is challenging, particularly in onchocerciasis endemic regions where there is a lack of well-trained health care workers. The success of an epilepsy treatment program will depend on the knowledge, engagement and acceptability of all the stakeholders.
AIM Prior to the implementation of a system to treat persons with epilepsy in Ituri we investigated the knowledge, attitudes, and perceptions about epilepsy in two health zones.
METHODS 16 focus group discussions and 40 semi-structured interviews were conducted with persons with epilepsy and their family, community leaders, community health workers, traditional healers, and health professionals in 2 health zones: Logo and Rethy.
RESULTS In the 2 zones epilepsy was a well-known disease and most people were aware of the possibility to treat this condition with anti-epileptic drugs. There was a request for a specialized center for epilepsy management. It was suggested to inform the population about epilepsy using communication channels of the church, traditional chiefs and health professionals. Reported challenges to obtain epilepsy treatment and care included: only access to traditional treatment, incurability of the epilepsy, stigma and taboo, lack of information and community support for people with epilepsy, unavailability of anti-epileptic drugs at primary health facilities, financial barrier to obtain anti-epileptic treatment (by patients and health professionals) and lack of training of health professionals to treat epilepsy. Traditional healers considered epilepsy contagious, transmitted by insects, saliva and by touching a person of the same sex during seizures. They said 'during seizure a man should be assisted by woman, if another man does so, he will get epilepsy'.
CONCLUSION Epilepsy is a well-known disease in Ituri and there is a great need and demand for a decentralized comprehensive epilepsy treatment program with affordable anti-epileptic drugs. Such a program need to include a community program that will address stigma and misconceptions.