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DEVELOPING THE FIRST NATIONAL DATABASE AND MAP OF LYMPHATIC FILARIASIS CLINICAL CASES IN BANGLADESH

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The Bangladesh Filarial Elimination Programme (FEP) is on track to meet the Global Programme to Eliminate Lymphatic Filariasis (GPELF) targets of 2020 by interrupting transmission with mass drug administration (MDA) and alleviating suffering by managing morbidity and preventing disability (MMDP) for 70 million people at risk. This study aimed to highlight FEP's success in determining the number of people affected by lymphoedema and hydrocoele, and to develop risk maps for targeted interventions across the 34 endemic districts (19 high; 15 low prevalence). In the 19 high endemic districts, 8,145 community clinic (CC) staff were trained to search for LF cases household census in catchment areas between 2013-2016 and registering all cases. In the 15 low endemic districts a team of 10 trained field assistants conducted active case finding utilising health facility records, health worker and community informants to identify and medically verify cases, with cases reported via a SMS mHealth database. Data recorded included general demographic (location, patient name, address, age, gender), and clinical information (lymphoedema, hydrocoele, severity, acute dermato-lymphangioadenitis (ADLAs). In the 19 high endemic districts, a total of 43,678 clinical cases were identified; 30,616 lymphoedema [70.1%; female 55.3%], 12,824 hydrocoele [29.4%], and 238 breast/female genital swelling [0.5%]. Rangpur district reported the highest number (8,545 lymphoedema; 2,654 hydrocoele). Overall the prevalence rate was 126/100,000 [highest in Lalmonirhat district 583/100,000]. In the 15 low endemic districts, 733 cases were identified; 661 lymphoedema [90.2%; female 39.6%], 57 hydrocoele [7.8%], and 15 both conditions [2.0%]. Risk maps, spatial and statistical analysis found district clinical prevalence was geographically and statistically correlated to baseline microfilaria (Mf) prevalence at r=0.904 [p<0.01]. FEP's remarkable efforts to identify LF cases across all districts represents one of the most comprehensive national databases on clinical LF in the world and provides a template for other countries to learn from and/develop.

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PROJECTED NUMBER OF PEOPLE WITH ONCHOCERCIASIS-LOIASIS CO-INFECTION IN AFRICA, 1995-2025

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In Central Africa, community-directed treatment with ivermectin (CDTI) against onchocerciasis is hampered by co-endemicity of *Loa loa*, as people with ≥30,000 *Loa* microfilariae/mL of blood can develop potentially fatal severe adverse events (SAEs). To be conservative, test and treat approaches will likely use a threshold of ≥20,000 *Loa* microfilariae/mL for exclusion from ivermectin treatment. We estimate the number of individuals with *Onchocerca volvulus* and *Loa* co-infections who are at risk (≥20,000 *Loa* microfilariae/mL) for post-ivermectin SAEs, for 1995, 2015 and 2025. We combined pre-control rapid assessment data (REMO and RAPLOA) on onchocerciasis and loiasis prevalence. The loiasis data were categorised by proportions of people with ≥20,000 *Loa* microfilariae/mL. We used the mathematical model ONCHOSIM to calculate the expected trends in *O.volvulus* prevalence for 1995 to 2025, accounting for local treatment history. The impact of ivermectin treatment on loiasis was considered based on published data, with a one-time reduction in *Loa* prevalence and intensity after one round of CDTI. Among areas where *Loa* is potentially endemic, the number of cases with *O. volvulus* declined from 19.5 million people in 1995, to 14.2 million in 2015 and 3.3 million in 2025. Of those, 114,771 people were co-infected with *Loa* microfilaraemia ≥20,000/mL in 1995; 44,370 predicted in 2015 and 20,477 in 2025. In 2025, 89% of cases (N=18,320) will live in onchocerciasis hypoendemic areas which would not benefit from control/elimination programmes. Democratic Republic of Congo and Cameroon will contribute to 78% of all cases in 2025. Mass distribution of ivermectin as part of the onchocerciasis elimination efforts is problematic in many countries. We predict that in 2025 over 20,000 people will require treatment for onchocerciasis while being at high risk of SAEs, justifying increased effort in research and development for safer drugs and control strategies targeted especially towards onchocerciasis hypoendemic areas which are co-endemic for loiasis.

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PREVALENCE OF EXPOSITION TO RIVER BLINDNESS IN THE GAROUA-BOULAI HEALTH DISTRICT (EAST REGION, CAMEROON): POTENTIAL CROSS-BORDER ISSUE IN THE CONTEXT OF ELIMINATION

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The control of onchocerciasis has been a success in many *foci* where the disease is endemic. However, large-scale preventive chemotherapy with ivermectin in *Loa* endemic areas to target hypo-endemic onchocerciasis is not recommended due to the risk of severe adverse events (SAE), thus slowing the momentum towards elimination. Since a safe threshold below which ivermectin can be administered through mass campaigns in communities was identify, additional epidemiologic investigations appeared essential to re-assess the distribution of infection in hypo-endemic areas that were not included in the original mass treatments, and particularly in the cross-border context. This study was carried out in the Garoua Boulai health district, belonging to the group of ivermectin naïve areas, and bordered to the east by the Central African Republic (CAR) where civil war led to an important refugee flow. A cross sectional survey following a community-based random cluster design was carried out to seek for exposure to *O. volvulus* using the newly developed SD Bioline onchocerciasis IgG4 rapid diagnostic test. The prevalence of exposition to river blindness ranged between 0.0% (95% CI: 0.0 - 8.0) and 20.0% (95% CI: 13.0 - 29.4), males being most exposed than females (*p* = 0.048). An important geographical heterogeneity in the distribution of exposition to river blindness was observed among the clusters surveyed (*p* < 0.0001). Amongst individuals with proven exposition to onchocerciasis, 30.2% were not native of the survey area, of whom 64.3% (95% CI: 49.2 - 77.0) were from CAR. The complete elimination of onchocerciasis implies the expansion of mass preventive chemotherapy in hypo-onchocerciasis areas which are up to now not targeted by mass treatments. This study