

Research Article

Transmission of Onchocerciasis in Wadelai Focus of Northwestern Uganda Has Been Interrupted and the Disease Eliminated

Moses N. Katarbarwa,¹ Frank Walsh,² Peace Habomugisha,³ Thomson L. Lakwo,⁴ Stella Agunyo,³ David W. Oguttu,⁴ Thomas R. Unnasch,⁵ Dickson Unoba,⁶ Edson Byamukama,³ Ephraim Tukesiga,⁷ Richard Ndyomugenyi,⁴ and Frank O. Richards¹

¹ Emory University and The Carter Center, One Copenhill, 453 Freedom Parkway, Atlanta, GA 30307, USA

² 80 Arundel Road, Lythan St. Anne's, Lancashire FY8 1BN, UK

³ The Carter Center, Uganda, P.O. Box 12027, Kampala, Uganda

⁴ Vector Control Division, Ministry of Health, 15 Bombo Road, P.O. Box 1661, Kampala, Uganda

⁵ Global Health Infectious Disease Research, College of Public Health, University of South Florida 3720 Spectrum Boulevard, Suite 304, Tampa, FL 33612, USA

⁶ Nebbi District Health Services, P.O. Box 1, Nebbi, Uganda

⁷ Kabarole District Health Services, P.O. Box 38, Kabarole, Uganda

Correspondence should be addressed to Moses N. Katarbarwa, mkataba@emory.edu

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located [4]. Later in the Uganda Atlas of disease distribution, Barnley gave a distribution map of onchocerciasis and its vectors showing the presence of a small onchocerciasis focus in Wadelai, and in the vicinity of the River Ora outfall in the Albert Nile transmitted by *S. damnosum s.l* [5]. As such, it became a target for piloting the elimination approach in late 2005.

2. Methods

2.1. Baseline Parasitological (Nodule and Skin Snips) Assessment in 1993

2.1.1. Nodule Assessment. Rapid epidemiological mapping of onchocerciasis (REMO) and rapid epidemiological assessment (REA) was conducted by nodule palpation with the assistance of River Blindness Foundation (RBF) and WHO/TDR throughout Nebbi district of north-western Uganda including the Wadelai area [6–8]. Based on REMO protocol for community selection, only one community (Olimbuni/Aroga) was selected for mapping and as a sentinel site in 1993. REMO is where “high risk” communities are first identified at every 30 km along the river, and additional primary communities located 10 km away from “high risk” ones are selected. If warranted, then secondary communities 10 km away from primary communities and tertiary communities 10 km from secondary communities are selected until onchocercal nodule-free communities are reached. Assessment of nodule rates was done among 30 adults of at least 20 years of age who had lived in the community for 20 years or more [7]. The results were expressed as a proportion of the number of positive/negative persons in the sample.

2.1.2. Skin Snips *Microfilariae* (mf) Assessment. Skin snips were also obtained from 50 adults in the same community (Olimbuni/Aroga) before mass treatment. The tip of a sterile lancet needle mounted in a holder was used to elevate 3–4 mm of skin over the right posterior superior iliac crest after cleansing the skin with alcohol. A sterile surgical razor blade was then used to remove a skin snip at the base of the elevation. The skin, dangling from the tip of the needle, was transferred to a well of 96 microtiter plate containing sterile normal saline solution. The blade and needle were then used to obtain the second specimen on the left side in the same manner, after which the needle and blade were discarded in an appropriately safe “sharps” container [6, 9]. The use of a disposable razor and needle is a government policy in order to avoid transmission of communicable diseases such as HIV/AIDS and hepatitis, as well as providing the program with standard tools that are affordable and readily available in the country. The skin snips were kept at room temperature in the microtiter plate in normal saline solution for 12–24 h to allow any mf present to emerge from the skin. Each skin snip was then removed from the well with a needle, and the saline solution was examined unstained under a microscope (40x) for mf of *O. volvulus*. The results were expressed as a proportion of the number of positive/negative persons in the sample.

Parasitological (nodule palpation and skin snips) assessments were carried out during 1993 in Olimbuni/Aroga community, prior to annual mass treatment with ivermectin. Wadelai focus was demonstrated to be isolated from other onchocerciasis endemic communities in the area (see Figure 1 title below).

2.2. Mass Treatment. Annual mass treatment with ivermectin commenced in 1993 when 2,593 persons were treated. In 1993 community-based treatment was introduced with the support of the River Blindness Foundation and in 1999 communities were empowered to make their own decisions under community-directed treatment with ivermectin (CDTI) [10]. Under CDTI, treatments grew to 5682 in 19 communities by 2005. When elimination e

if zero positives are found [16]. Meetings were held with community members, teachers, and community leaders, in order to explain the purpose of taking blood spots from the children's finger tips. A sample size of 3,011 resident schoolchildren was included in the study, representing most of the school-age children born and raised in the Wadelai focus. The national guidelines based on WHO criteria consider onchocerciasis elimination has occurred when the prevalence of infection (defined as antibodies to OV-16) is <0.1%. The antibody (IgG4) is a marker of early exposure and specific for *Onchocerca volvulus*, and therefore can be used to detect the presence of *O. volvulus* in the early prepatent period of infection [17]. Its sensitivity was 76.5%–

Models of published field data from the Americas have demonstrated that twice yearly treatment with ivermectin can eliminate onchocerciasis within 6.5 years [22]. Twice-per-year treatment is the strategy for elimination of transmission in the Americas. The data reported here were collected as a result of a pilot study developed by the

