



## The Impact of River Blindness Control Programs in Africa: Better Health, More Wealth

In 1974, the Onchocerciasis Control Programme (OCP) was launched in West Africa to combat the devastating effects of river blindness. A disease of the neglected poor, river blindness locked large numbers of people into poverty by affecting not just their health, but also their educational and earning opportunities. It placed an overwhelming economic burden on households, national economies, and the region as a whole. The most severe consequence of river blindness is total vision loss, which affected one-third of the adult population of the most highly affected communities. While blindness is the most stark consequence of infection, skin-related problems were the most significant cause of substantial morbidity among affected populations. Persistent and severe itching not only caused psychosocial problems related to ostracism and stigma but also had a demonstrably negative secondary socioeconomic impact on agricultural productivity, breastfeeding, and school attendance. Today, loss of vision due to river blindness has been pushed back in large swathes of Africa, and because 100 million people are treated, severe skin problems are rare. With these improvements in health, better socioeconomic outcomes have followed.

### Health System Strengthening and Enhanced Program Sustainability through Community Action

Volunteers deliver medicines to at-risk populations through the Community-Directed Treatment with ivermectin (CDTi) approach. Through the CDTi strategy, the African Programme for Onchocerciasis Control (APOC) reaches many neglected, 'end-of-the-road' communities that have limited or no access to basic health services. With this platform, geographical and therapeutic coverage have increased substantially; in most areas, to the levels required to eliminate river blindness as a public health problem. The CDTi approach now serves as a platform for the integration of other health interventions, such as delivering bed nets and micronutrients, and providing medicines for other preventable NTDs and seasonal malaria control.

One of the legacies of APOC with respect to vector elimination is the training of local health workers in the multiple tasks associated with vector control. With the CDTi approach, endemic communities are able to take full responsibility for the drug-delivery process; they decide how, when and by whom treatment should be administered, and oversee its implementation and follow-up. This

is a form of capacity-building that will benefit many other community health programs in the future.

River blindness programs have made important contributions to strengthening the health systems of West Africa. The OCP helped strengthen disease-surveillance capacity, drug-distribution systems, and health information and reporting systems. It also supported a model for decentralization and integration of disease control activity for district level to community level engagement. APOC has helped Ministries of Health build administrative and technical capacities in health services delivery, and especially community programs that reach the poor. Involving both peripheral and district health services in the implementation of APOC has resulted in the general strengthening of the health sector.

### Disease Control and Elimination

In the 11 countries covered by the OCP<sup>1</sup>, the combined application of vector control and ivermectin treatment has led to the virtual elimination of river blindness as a public health problem and as an obstacle to socioeconomic

<sup>1</sup> Countries which participated in the OCP program included: Benin, Burkina Faso, Cote d'Ivoire, Ghana, Guinea, Guinea Bissau, Mali, Niger, Rwanda, Senegal, Sierra Leone, and Togo



development. APOC<sup>2</sup> has successfully expanded and accelerated treatment with ivermectin in participating countries, thereby relieving the skin manifestation and intolerable itching in severely infected individuals, and preventing an estimated 40,000 new cases of blindness each year. In most advanced APOC projects, the prevalence of infection is already close to zero.

Blindness from this cause occurs after many years of infection with the parasitic disease. Taking ivermectin annually kills the juvenile worms that cause the various symptoms associated with river blindness. As a result of the successful river blindness partnerships, the once common scene of a child leading a blind adult with a stick no longer occurs.

Research now shows that ivermectin treatment can not only control but, in many areas, eliminate river blindness infection and interrupt transmission. Treatment can safely be stopped where interruption of transmission has been demonstrated. In Senegal and Mali, the transmission of river blindness has been successfully interrupted, with treatment suspended since 2009. Following this model, transmission has been interrupted in six countries in Africa: Burundi, Mali, Nigeria, Rwanda, Senegal, and Uganda. The continent is on track to eliminate the disease from nearly all endemic countries by 2025.

<sup>2</sup> Countries added by the APOC program were: Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Ethiopia, Gabon, Kenya, Liberia, Malawi, Mozambique, Nigeria, Rwanda, South Sudan, Sudan, Uganda, and Tanzania

## Impact on Health, Human Development, and Agriculture

**Promoting Agriculture and Human Development:** In the past, communities avoided cultivating the best fertile land near rivers because of fear of infection with the parasitic disease. In countries benefiting from OCP and APOC programs, these communities have now developed greater market-oriented land use, which in turn has helped improve access to electricity and telephone services, markets, and education. These investments have made 25 million hectares of arable land safe to cultivate, with the potential to feed 17 million people.

**Preserving Sight:** As a result of the river blindness partnerships, blindness from onchocerciasis no longer occurs in communities where regular treatment is available. Sixteen million children born after 1974, when OCP activities began, are free of river blindness, and more than 200,000 cases of blindness have been prevented.

**Improving Health:** The impact of the river blindness partnerships on improving health and quality of life has been substantial. APOC activities are estimated to result in almost 10 million discounted healthy life-years being added between 1996 and 2017 or 27 healthy life-days being added per US dollar invested in APOC activities. In terms of Disability-Adjusted Life Years (DALYs), the total burden of human river blindness in Africa had resulted in approximately 884,000 DALYs lost annually, a loss that

is now largely averted. Today, more than 1.5 million people originally infected are free of the disease.

## Return on Investment

Since 1974, the budget for OCP and APOC totaled US\$1.2 billion in donor financing. When the OCP was operational, the cost of protection for each individual per year was well under US\$1. The cost per treatment is about US\$0.15 for APOC, with the cost per person treated continuing to fall over time. Key reasons for this substantial value for money are that the medicines are donated and the CDTi process is low cost.

The economic rate of return here has been estimated based on the increase in the labor force due to prevention of blindness, and the increased land use. The 18-20 percent economic rate of return estimated for OCP from the inception of Phase 1 in 1975 up to 2002 compares well with other development projects, including those outside the health sector.

## Looking Forward

The control of river blindness has been a remarkable success story. Now, focus has shifted to a more ambitious goal: the elimination of river blindness in addition to other preventable neglected tropical diseases (NTDs) from Africa. To help countries achieve this aim, plans are underway to transition APOC into the regional NTD Programme for the Elimination of Neglected Diseases in Africa (PENDA). It is hoped that PENDA will help ensure that future generations live free from the threat of debilitating diseases of poverty.

