# CHAPTER 1

# INTRODUCTION

## 1.1 RATIONALE

Onchocerciasis remains a serious public health problem in large parts of tropical Africa where some 18 million people are affected. The most severe consequence of onchocerciasis is blindness, which may afflict over one third of the population of the most affected communities. Other important problems are serious visual impairment, intensely itching rashes, wrinkling and depigmentation of the skin, lymphandenitis resulting in hanging groins and elephantiasis of the genitals, and general debilitation.

The disease is called also "River Blindness"; a name, which expresses its endemic location, and its most serious manifestation. Since the fertile riverside areas where the blackfly vector abounds are frequently deserted through fear of the disease, it is not surprising that onchocerciasis constitutes a serious obstacle to socioeconomic development. The countries in the West African savanna zone were particularly burdened by the adverse health and socioeconomic impact of the disease, as exemplified by the situation in the north of Benin where 70% of the total population in the endemic area were infected. Of this 10 per cent had serious ocular manifestations, including a high rate of blindness.

Onchocerciasis is caused by a parasitic filarial worm: Onchocerca volvulus. It is transmitted from person to person by blackflies: Simulium damnosium. Blackfly eggs are laid in the water of fast flowing rivers from where the adults emerge after eight to twelve days; blackflies live for up to four weeks and cover several hundred kilometers in flight. The female worms can live in the human body for up 12 years and produce millions of microfilariae, which migrate to the skin where they can be ingested by biting blackflies. Onchocerciasis manifestations occur one to three years after the injection of infective larvae.

**How to solve the problem**

- Interruption of transmission

Firstly the basic strategy of the program consists of bringing the blackfly population to a level where transmission of microfilariae is excluded and the maintaining that level until the macrofilariae in humans die out.

- Distribution of ivermectin

The method for the disease eradication / control in West Africa is through mass distribution of ivermectin (MECTIZAN). It is a safe and effective drug for the mass treatment of onchocerciasis and is used on an individual basis. It reduces the ability or the treated person to transmit onchocerca volvulus infection (Taylor et al, 1990).

**How are OCP operations funded?**

The program is financing by donor agencies, international development banks, multilateral institutions, and organizations belonging to the United Nations system. Furthermore, the participating countries contribute in cash or kind making available office space and other facilities as well as nationally remunerated staff. Donor contributions are paid into the onchocerciasis fund administered by the World Bank , which solicits individual contributions.

**What have been the costs so far?**

Table 1 summarizes the costs during the first three financial phases as well as the annual expenditures during the fourth financial phase.

Table: 1 Costs of onchocerciasis control

US$ Million

| First financial phase | Second financial phase | Third financial phase | Fourth financial phase | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1974-1979 | 1980-1985 | 1986-1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| 56.1 | 106.9 | 177.4 | 31.7 | 29.7 | 28.3 | 28.3 | 27.7 | 26.9 |

Source: OCP/WHO. Onchocerciasis Control Program 1974-1994.

**How will the program end**

After twenty years of successful control; the Onchocerciasis Control Program (OCP) is nearing the end. The first part of the program's objective to remove onchocerciasis as a disease of public health importance and an obstacle to socioeconomic development has been achieved. Although the human reservoir of onchocerciasis parasites has been brought to an epidemiological insignificant level in the original OCP area, this is not yet so in the extension areas where larviciding is not considered cost-effective for other endemic areas in Africa. The blackfly knows no borders and therefore readily conveys infection from one country to another.

To control onchocerciasis as a public health problem ivermectin needs to be given at least once per year to the population of all seriously affected communities. Since ivermectin treatment has only limited effect on transmission of the parasite, annual large-scale treatment will have to be continued for a very long time to ensure

sustained control of disease. Devolution i.e. the countries themselves assuming responsibility for detecting and controlling the disease at the low level achieved by the program, is increasingly the main challenge facing OCP in Benin. This challenge is a topic for reflection.

## 1.2 BACKGROUND

### 1.2.1 The Republic of Benin

The Republic of Benin is a west tropical country with an area of 112,622 square km and 5,779,966 inhabitants in 1997. It borders Nigeria in the East, Togo in the West, Niger in the North, Burkina Faso in the Northwest and the Atlantic Ocean in the South. The country is divided into six provinces:

- Atacora (31,200 square Km)
- Atlantic (3,222 square Km)
- Borgou (51,000 square Km)
- Mono (3,800 square Km)
- Oueme (4,700 square Km)
- Zou (18,000 square Km)

Each of the provinces is divided into districts (77 total); the districts are composed of communes (517 total) and the communes are composed of villages (3,378). Onchocerciasis is occurred in the two provinces in the North ( Atacora and Borgou) and in the center (Zou).

The following social and economic indicators describe the country (UNICEF 1998; and MOPH Benin 1997)

- crude birth rate (1996) : 43 per 1000
- population annual growth rate (1980-1997) : 3.0 %
- mortality :
    * crude death rate(1996) : 13 per 1000
    * infant mortality rate (1996) 84 per 1000
    * under five mortality rate (1996) 140 per 1000
    * maternal mortality rate (1995) 223 per 100,000
- life expectancy (1996) 56 years for males 58 years for females
- literacy rate (1995) : 37.7 %
    * males 49%
    * females 26%
- GNP per capita (US$) : 430 in 1993, 370 in 1996
- GNP per capita average annual growth rate (1985-1995) : -0.3%
- Annual rate of inflation (1985-1995) : 3%

### 1.2.2 From Primary health Care to the Bamako initiative

In early 1980s, the health system in Benin was reoriented to match the new approach of Primary Health Care (PHC) which was universally agreed in 1978 as the vehicle through which the lofty goal of " Health for all by the year 2000" was to be achieved. The principles and components of PHC are summarized in table 2.

Table 2: Principles and components of Primary Health Care

| *Principles of PHC* | *Components of PHC* |
|---|---|
| Equity | Education concerning health problems and Methods of preventing and controlling them<br>Promotion of food supply and proper nutrition<br>Adequate supply of safe water and sanitation |
| Self reliance | Maternal and child health care including family Planning<br>Immunization against major infectious diseases |
| 3. Prevention | Prevention and control of local endemic diseases<br>Appropriate treatment of common diseases and Injuries<br>8. Provision of essential drugs. |

Source: WHO, quoted by Lafond (1995).

As the historical meeting in Alma Ata prescribed to countries to develop their own strategies and plans of action to achieved the goal of "Health for all by the year 2000"; many prevention and control of local endemic diseases were developed; community participation in the management and decision making process are highly recommended.

The strategy adopted by Benin Program of Onchocerciasis Control (BPOC) to achieve his goal is essentially based on the community treatment with ivermectin, treatment that community and BPOC can sustain over time through Primary Health Care. This strategy will be reinforced by periodic vector eradication.

One potential risk is linking of devolution for the success of Onchocerciasis Control Program; this devolution, which will last from 1997 to 2002, consists of progressive disengagement of external donors and Benin engagement. Devolution failure will lead to the persistence of the vector, then new invasion of the areas.

The major risk and challenge is to strengthen institutional capacity of the country to ensure the viability and sustainability of this program. The fear is the difficulties of the country to mobilize sufficient revenue for this program; in view of the economic crisis and its negative impact on government revenue, and the heavy debt burden of Benin.

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