Sanofi-aventis: Fighting Sleeping Sickness in Africa

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Sanofi-aventis is the largest pharmaceutical company in Europe and the fourth largest in the world. In 2001, sanofi-aventis began a partnership with the World Health Organization (WHO) to fight sleeping sickness and other neglected diseases affecting the world’s poorest populations. Over the first five years, 36 African countries benefited from the sanofi-aventis/WHO partnership programme with the number of new cases reported in these countries dropping. In October of 2006, sanofi-aventis and the WHO renewed their collaboration with a new agreement covering an extended range of neglected tropical diseases and an additional commitment of US$25 million over the next five years. This case examines the special challenges and opportunities faced by this partnership and the innovative ways in which the partnership has been kept strong and sustainable. It also discusses some of the challenges faced by this programme in delivering effective healthcare to the rural poor, because many live in remote parts of Africa.

Introduction

Sanofi-aventis is the largest pharmaceutical company in Europe and fourth largest in the world with a presence in 88 countries. Headquartered in Paris, France, sanofi-aventis is composed of almost 100,000 employees around the world, with approximately 52 percent of these employees based in Europe. Sanofi-aventis focuses on seven main therapeutic areas: cardiovascular diseases, thrombotic diseases, metabolic disorders, oncology, central nervous system disorders, internal medicines and vaccines. The guiding principle of sanofi-aventis’ business activity is, “discovering and developing innovative and well-tailored treatments and making them available to doctors and their patients.”

In 2001, sanofi-aventis set up a department, made up of people from both sanofi-aventis and the World Health Organization (WHO), tasked with completing a situational assessment of the expectations of the world’s most deprived populations and drawing up concrete action plans. The setting up of this department was in fulfilment of sanofi-aventis’ corporate strategy, an integral part of which was based on the principle that “healthcare is a right and a right that all should enjoy.” The department was charged with the responsibility of putting into practice the company’s access to medicines policy. In addition to immunization and vaccines, five diseases were identified as areas where sanofi-aventis’ experience could be effectively applied: malaria, tuberculosis, epilepsy, leishmaniasis (a parasitic disease) and sleeping sickness. In the particular case of sleeping sickness, sanofi-aventis was already in a leading position because it had three of the four major drugs able to cure affected patients.
Sleeping Sickness in Africa – The Extent and Threats

Sleeping sickness is a parasitic disease transmitted to humans through the bite of the tsetse fly. WHO statistics show that in 2006 approximately 70,000 cases were reported, although the total number of people infected is estimated at approximately 500,000. With early diagnosis the chance of recovery from sleeping sickness is good. However, undiagnosed and untreated cases have 100 percent mortality rate.

In the first phase of the disease the bite by the tsetse fly is often painful and can develop into a red sore. The parasites then multiply in the blood, causing a litany of non-specific symptoms, such as fever, severe headache, extreme fatigue, swollen lymph nodes and aching muscles and joints. In the second phase of the disease, the parasites infect the central nervous system resulting in irreversible neurological damage manifested by confusion, personality changes, difficulty walking, sleep disturbance, and eventually coma and death. An illustration of the life cycle of the sleeping sickness parasite is given in Figure 1.

Figure 1: Life cycles of the sleeping sickness parasites

1 Source: US Centre for Disease Control. Available at www.dpd.cdc.gov/DPDx/HTML/TrypanosomiasisAfrican.htm
The disease flourishes mainly in the impoverished rural parts of Western and Central Africa (see Figure 2). WHO has documented a number of epidemics of sleeping sickness in Africa in the last century: one between 1896 and 1906 in Uganda and the Congo Basin, one in 1920, and the most recent one in 1970. The re-emergence of the disease from the 1970s, after almost disappearing in the 1960s (it was reduced to less than one case in 10,000), was due to a relaxation of surveillance and control efforts. By 1998, almost 40,000 cases were reported with an estimated 300,000 to 500,000 undiagnosed and untreated cases. In the Democratic Republic of the Congo (DRC), Angola and Southern Sudan, sleeping sickness prevalence reached about 50 percent in some areas, making it endemic in these countries. Subsequently, in these areas sleeping sickness became the first or second greatest cause of mortality.

**Figure 2: East and West African Sleeping Sickness Species and Prevalence**

[Sleeping sickness map showing prevalence of T.b. gambiense and T.b. rhodesiense across Africa.]

**SOCIO-ECONOMIC BACKGROUND OF ENDEMIC COUNTRIES**

Most of the countries in which sleeping sickness is endemic are relatively poor, have very high rural populations and generally have low public spending on health. Thirty-six countries in Sub-Saharan Africa (SSA) are impacted by sleeping sickness. Figure 3 provides socio-economic information on three of the most endemic countries for sleeping sickness: Angola, the DRC and Sudan.

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2 Source: WHO. Note that sleeping sickness is caused by Trypanosoma brucei rhodensiense in Eastern Africa and Trypanosoma brucei gambiense in Western Africa. Both protozoan species are morphologically indistinguishable.
Governments in Sub-Saharan Africa generally have low expenditures on health, with the continental average being about US$32 per person per year in 2000. The amount is even lower for the three most endemic countries shown in Figure 3. Not surprisingly, the level of immunization in these countries is also very low compared to the average for Sub-Saharan Africa. These statistics highlight the gravity of the problem. A large number of poor, rural people who are at risk of getting sleeping sickness live in countries that spend very little on healthcare.

As a result, the negative repercussions of sleeping sickness are enormous:

- It is a disease that affects the poor and marginalized rural populations who depend mainly on the land for their livelihood. The disease can therefore perpetuate the poverty-disease cycle, because it affects people mainly in the productive age group.
- There is a high probability that children affected by sleeping sickness will have considerable delay in mental development, even after successful treatment. This will impact negatively on their education and consequently their future livelihoods.
- A country affected by sleeping sickness is likely to experience increased inequality and a reduction in its human capital.

## A Partnership to Fight Sleeping Sickness

### ORIGIN

In 2001, when Rhone Poulenc-Rorer and Hoechst-Marion-Roussel merged together to create Aventis (one of the two sanofi-aventis parent companies), their joint portfolio included the three major medicines capable of curing patients affected by either the first phase or the final

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3 This refers to the immunisation against Diphtheria, Pertussis (or whooping cough) and Tetanus.
phase of sleeping sickness. The newly formed company considered that this leadership position in the treatment of sleeping sickness was an advantage that could be leveraged to benefit many people. The company initially considered just donating free medicines to the WHO.

Further discussions with the WHO showed that making a simple drug donation was not going to be enough to help control the disease in endemic areas. Only a combined action based on drug donation, subsidies to fund distribution programmes and new research and development efforts to improve the existing treatments and diagnostics could give a reasonable chance to bring sleeping sickness back under control. This could only be achieved with the creation of a full partnership between the company and WHO at both the international and regional levels. It was agreed that this initial partnership would cover a period of five years (2001 to 2006) and represent a total commitment of US$25 million for the company, of which approximately half was to cover the cost of the donated drugs.

The concept of combined activities, a high level of flexibility in the daily realization, mutual confidence and an innovative mechanism of regular “working-together” sessions were the most innovative aspects of this partnership, linked to distribution done by the NGO Doctors Without Borders/Médecins Sans Frontières.

After five years, 36 African countries have benefited from the sanofi-aventis/WHO partnership programme. Of these 36 countries, 11 reported more than 50 new cases in 2004. In about 15 of the 36 countries, no new cases were reported in 2004. The most endemic countries in 2004 were Democratic Republic of Congo (reporting 10,369 new cases), Angola (2,280 new cases) and Sudan (1,766 new cases).

THE AGREEMENT
The partnership between sanofi-aventis and WHO, which officially started in July 2001, was tailored to combat sleeping sickness in Africa in such a way that, at the end of the five-year partnership, conditions could have been met for a disease elimination policy to be successfully established. The partnership included a contractual agreement. Under this agreement, each partner worked towards the shaping and implementation of an effective health strategy against sleeping sickness in Africa. Periodically, the two partners met to evaluate the rhythm of the drug delivery process, the efficiency of treatments, the progress of diagnosis programmes and health worker training modules. This assessment is done every six months with data obtained from the field through WHO missions as well as government agencies. These reports and data are obtained through the Programmes Nationaux de Lutte contre la Trypanosomiase (PNLT) / National Programmes for Fighting Trypanosomiasis.

The contractual part of the partnership had three signatories, even though effectively it involved two organisations: sanofi-aventis and the WHO. The three signatories were WHO, sanofi-aventis and Tropical Disease Research, an entity comprised of representatives from WHO, the World Bank, UNDP, UNICEF and others, but hosted by the WHO. Tropical Disease Research conducts clinical trials involving new treatments for neglected tropical diseases.
diseases. Additionally, the partnership has relied on Doctors Without Borders to distribute the drugs donated to WHO in the relevant African countries.

In October of 2006, sanofi-aventis and the WHO renewed their collaboration with a new agreement, which commits US$5 million of drugs to treat sleeping sickness and another US$20 million in financial support for the control of neglected tropical diseases. A total amount of US$25 million will be committed over the next five years.

WHO’S ROLE
The WHO is the main driver and leader for the overall sleeping sickness programme. The total costs associated with the WHO’s role in the programme is covered under the agreement. Although the WHO covers the major costs, participating countries do make some contributions. For instance if eflornithine is provided under this programme, the country will have to pay for the water for perfusion, as well as the necessary needles. In cases where countries ask for special dispensation (because they are too poor), WHO makes the decision as to whether or not to offer assistance. The specific role of the WHO can be outlined as follows:

- Define the relevant public health strategies.
- Train health personnel in the beneficiary countries.
- Coordinate the distribution of the therapeutic drugs to patients.
- Strengthen and coordinate control measures, and ensure that field activities are sustained.
- Help strengthen the existing surveillance systems in the endemic countries.
- Establish a regular forecast of the quantities needed of each of the three drugs to cover the expected patient needs, and send manufacturing requests to sanofi-aventis accordingly.
- Determine which quantities of each of the three medicines should be sent to which countries and provide Doctors Without Borders the necessary orders of expedition.

SANOFI-AVENTIS’ ROLE
Sanofi-aventis’ specific role in the partnership is as follows:
Supply the three drugs (pentamidine, melasorprol and eflornithine) available for the treatment of sleeping sickness, free of charge, in a timely manner and in quantities fixed by WHO according to regular needs forecasts.

Transfer the manufacturing of those drugs to the developing countries to help reduce their price. This has been done for pentamidine and eflornithine, where an Indian subsidiary has been sub-contracted to manufacture these drugs.

Provide funds to allow WHO to strengthen programmes aimed at bringing the disease under control. Some of these activities include campaigns for routine screening of populations in high-risks areas, monitoring the epidemiological progression in infested areas and the training of healthcare personnel.

Support WHO/Tropical Disease Research efforts in research and development of new treatments.

ROLE OF DOCTORS WITHOUT BORDERS / MÉDECINS SANS FRONTIÈRES (MSF)

Doctors Without Borders is an independent, international, medical and humanitarian organization that delivers emergency aid to people affected by armed conflict, epidemics and natural or man-made disasters. In the fight against sleeping sickness in Africa, they play three key roles:

- They are mandated by the WHO to receive the three drugs donated by sanofi-aventis and store them as long as necessary.
- According to orders received from WHO, MSF-Logistics distributes the injectable doses in the relevant endemic countries.
- Beyond their contribution to the sanofi-aventis/WHO partnership realization, MSF was also the most active NGO (although not the only one) engaged in a programme of sleeping sickness control activities including diagnosis and treatment.

The costs associated with MSF distributing the drugs are paid for under the agreement.

ROLE OF THE COUNTRY

The sanofi-aventis and WHO partnership programme help sleeping sickness endemic countries by providing treatment drugs free of charge, subsidizing the distribution of the drugs across the countries (using MSF) and supports new research and development efforts to improve the existing treatments and diagnostics. The implementation of the country programmes is done in collaboration with the national authorities. The WHO outlines each country’s role as follows:

- Health ministries should develop plans, policies and implementation frameworks for sleeping sickness to ensure uniform control activities. This is essential as the planning, implementation, supervision, monitoring and evaluation is done at the district level (with participation from communities).
• The health ministry in each country is responsible for mobilizing resources for the programme. They are to provide overall coordination, supervision, monitoring and evaluation of the programme.
• Each country has a sleeping sickness control programme with a manager appointed by the country.

These national programmes act as the information conduits from the field to the WHO. WHO receives demands for drugs from different parts of the country and for different phases of the disease from these national programmes.

The participation of the countries in the programme differs for various reasons. For instance, the WHO reports that in Angola the national programme is supported financially by the government and has established 13 mobile teams. The geographical extent and the population size of the endemic areas means this support is inadequate. In the Democratic Republic of Congo, the national control programme, with support from a Belgium bilateral cooperation project, is maintaining 46 mobile teams. France and Denmark also provide support for control activities. In both of these countries, WHO reports that staff members involved in the national control programmes are well trained and dedicated.

Development Impact of the Programme

The sanofi-aventis and WHO partnership programme to fight sleeping sickness in Africa has had a significant positive impact so far. It is reported that some 14 million people have been screened for the disease, and one million injectable doses of medicine have been distributed and administered to patients. The development impact of the programme can be summarized as follows:

DECREASED DEATH FROM SLEEPING SICKNESS

Nearly 110,000 lives have been saved as a result of the programme. Without treatment, sleeping sickness is fatal, and the prospects of a cure are better when it is identified in its early stages. Therefore, screening is as important as the treatment. The increased screening and treatment, which has resulted from the sanofi-aventis and WHO partnership, has helped to reduce sleeping sickness related mortality significantly. In Figure 4 we see that the total number of people screened in the most affected African countries has increased from a level of about 1.8 million people in 1998 to almost 3.3 million people in 2004.
The increased screening and treatment being offered to patients around Africa has resulted in a decrease in the number of new cases of sleeping sickness being reported. In Angola and the DRC, there has been a decline in the number of new cases (Figure 5). In Sudan, however, the various conflicts in Southern Sudan and Darfur have had a significant impact on the effectiveness of the programmes there.

The chances of survival are greater if the disease is diagnosed in its early stages. Therefore, the increase in the number of people being screened reduces the number of deaths caused by sleeping sickness.

Source: Weekly Epidemiological record (24th February, 2006), WHO
INCREASED ACCESS TO AFFORDABLE AND BETTER HEALTHCARE
Those at risk, as well as those with the disease, are usually the poor and live in the impoverished, rural parts of Africa. For some of these people, they simply cannot afford to spend their limited resources on healthcare. Also, public expenditures on health in these countries are very low. For instance, about US$10 is spent on each person’s health in the Democratic Republic of Congo (Figure 3). This programme offers a large number of people better and more affordable healthcare as it relates to sleeping sickness. In the year 2005, for example, sanofi-aventis supplied, free of charge, about 350,000 ampoules of medicines for the treatment of about 40,000 patients. Consequently, the incidence of illness or death that results from sleeping sickness has been greatly reduced because of this programme.

SUSTAINED LIVELIHOODS
Even in the early stages of the disease, the patient suffers from symptoms such as fever, severe headache, extreme fatigue, and aching muscles and joints. Given that most of these rural people are either farmers or pastoralists, the disease can have a significant, negative impact on their livelihoods. A disease that affects negatively the human effort required in these sectors has serious implications for livelihoods. Good health, which is offered by this programme, will help to sustain the livelihoods of a large number of already poor people in Africa.

HUMAN CAPITAL GROWTH
The programme has important spill over effects in the form of reducing the loss of human capital that results from sleeping sickness. The correlation between the health of an individual and their ability to accumulate human capital through education has been established. Therefore, fighting a disease that can potentially prevent people from acquiring education has a positive impact on the human capital of a country.

Major Challenges faced by this Programme
Some of the major challenges faced by the programme described below:

COSTS
The treatment costs include not only the cost of the drugs themselves but also the high cost of delivering and administering them (e.g. the required four injections per day over 14 days results in high nursing costs). Effective treatment also requires actively screening the populations at risk in order to identify patients at the early stages and therefore reduce
transmission. Exhaustive screening requires major investments in resources (human and material). Most of the countries where the disease is found are poor and have limited resources for investments in health.

REMOTENESS OF DISEASE PRONE AREAS
Areas where the disease is mostly found are remote and, therefore, reaching infected individuals or those at risk poses a great challenge. For instance, in Angola, WHO notes that the geographical extent and the population size of the endemic areas pose serious challenges. In such situations, many individuals may die before they can be diagnosed and treated.

CIVIL STRIFE AND CONFLICT
Population movements, which result from political upheavals, reduce the ability to detect people and populations at risk. Conflicts in countries, which are sometimes confined to the disease prone areas, result in situations where some of the inhabitants migrate and can no longer participate in the screening activities.

INADEQUATE HEALTH PERSONNEL AND INFRASTRUCTURE
African countries generally have a shortage of health personnel and also lack adequate health infrastructure.

“NEGLECTED” DISEASE
Sleeping sickness is seldom considered a public health priority. This leads to scarce resources being allocated to diseases that might be more visible on the political agenda. As noted earlier, most countries have very low expenditures on public health and therefore a “neglected” disease is likely to attract even less resources.

How Major Challenges are Addressed
The sanofi-aventis/WHO partnership does not pretend to overcome all the challenges listed above. However, they believe that their existence has changed the environment of the disease in certain ways.

• Costs to be borne at the country level have been dramatically reduced due to the donation of drugs and the financial support of the screening programmes. In other words, governments in these countries can re-channel whatever little expenditure they were making in the fight against sleeping sickness into other necessary areas.

• Training programmes for healthcare workers and doctors have increased the number of people able to diagnose and treat the disease. These training programmes are organized every year for nurses and doctors over a three-week period, with the costs paid for under the sanofi-aventis programme.
Sleeping sickness awareness has been raised significantly, and as a result, it has gained prominence in the political agenda. New initiatives in the research and development of new diagnostic and treatment options are expected to be available in the next few years. In 2005, the African Union endorsed a resolution calling for the elimination of sleeping sickness as a major public health concern in the endemic countries. This resolution can be seen as a “final push” to control the disease for good, and bring eradication one step closer to reality.

Key Success Factors and Innovations

Three key factors are identified by sanofi-aventis as being responsible for the success of the partnership in fighting sleeping sickness:

TRUST AND FLEXIBILITY

Mutual trust and confidence between the key individuals in charge of running the partnership has proven to be essential to the success of the partnership. This allowed a high level of flexibility in the way contractual activities were conducted by partners, making the partnership a succession of tailor-made operations, instead of activities designed by technocrats.

QUALITY AND TRACEABILITY

The quality of the products used for patient treatment was assured. In addition, the products delivered were always traceable in quality and quantities, and this has aided effective epidemiological monitoring.

PERIODIC EVALUATION

The joint periodic evaluation of performance on selected indicators such as delivery performance, epidemiology and diagnostic scope helped to keep the programme on track.

How Do Sanofi-aventis and WHO Benefit from this Programme?

SANOFI-AVENTIS

The benefits for the individuals affected and potentially affected have already been mentioned above in the development benefits section. Sanofi-aventis benefits in a number of ways, as well:
Visibility
This partnership enhances the visibility of sanofi-aventis’ dedication to sustainable corporate citizenship and to fighting against neglected tropical diseases affecting African citizens.

Improving Dialogue with Public Health Leaders
This kind of programme helps the company to be seen as a public health contributor, especially in an area where no profit is to be expected.

Internal Cohesiveness
Sanofi-aventis believes that this programme helps in improving the internal cohesiveness of their personnel, because they are proud to work in a company that is able to provide effective cures to illnesses wherever it can.

WORLD HEALTH ORGANIZATION
The WHO/sanofi-aventis partnership is the expression of the support of sanofi-aventis to the policies and strategies of the WHO in fighting neglected tropical diseases. This partnership allowed the WHO to take a strong leadership position in the coordination of control activities and to drive the process until an expected elimination of sleeping sickness as a public health problem is achieved. The WHO sees this partnership as a unique experience on how an international organization and a private company can build a sustainable collaboration for poverty alleviation.

Challenges and Opportunities for Scalability

OPPORTUNITIES

Replicating programme to combat other diseases
There are other therapeutic areas such as malaria, epilepsy, tuberculosis, and Leishmaniasis that remain problematic in developing countries.

Successful partnerships
The partnership with an organization, such as the WHO, provides a good platform for reaching the poorest of the poor.

CHALLENGES

Financing Costs
Since there are no tangible returns to such investments, the high costs of these types of programmes can be prohibitive for smaller pharmaceutical companies. This is why programmes based on drug donations are usually discouraged. However, in this specific case, because the elimination of sleeping sickness is a reachable objective in the foreseeable future,
it has been agreed that drug donations were admissible. The confirmation of this came from the second phase of the agreement, signed in October 2006, where the budget for drug donations was significantly decreased (leading to an increase of cash subsidies for control programmes). As fewer cases occur, there is less of a need for drugs, and the portion of the money budgeted for drugs is transferred to control programmes.

Civil Strife and Conflict

The potential for internal conflicts and civil strife is higher in developing countries. The potential dangers that they pose to personnel of organizations involved with such programmes can reduce the extent to which such programmes can be replicated.

Conclusion

The partnership between sanofi-aventis and WHO in the fight against sleeping sickness in Africa is yielding desirable results. This partnership, which has been extended to other tropical diseases, can positively impact many lives in developing countries. In spite of challenges such as high costs and conflicts in many of the trypanosomiasis endemic areas, the success of this programme will have significant benefits for sanofi-aventis. Some of these benefits include the increase in the internal cohesiveness of sanofi-aventis, an improvement in its ability to dialogue with public health leaders and an enhancement in the visibility of sanofi-aventis as a company that is dedicated to fighting tropical diseases.
References


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