



Science For A Better Life

HELPING EFFECTIVELY

together with strong partners

**Introducing the HealthCare
Programs department:**

Family planning

How we combine social
responsibility with economic
sustainability

Neglected diseases

Why we focus on both proven
drugs and new therapies

Report

How our commitment helps
patients with African sleeping
sickness



Baye**r** HealthCare





Family planning poster outside a mobile health advisor's office in Adama, Ethiopia

Helping effectively – together with strong partners



Klaus Brill, Head of Corporate Commercial Relations, Bayer HealthCare Pharmaceuticals

Bayer HealthCare Pharmaceuticals has set itself an ambitious goal: we want to improve people's health and quality of life worldwide, regardless of where they come from or how much they earn.

Our HealthCare Programs (HCP) department, whose work we would like to present here, collaborates with a network of strong and competent partners who include international aid agencies, government representatives, private companies and local institutions. Our alliance is a group of dedicated people who all want the same thing: to help in a way that is effective and sustainable.

Bayer devotes itself to researching, developing and providing medicines. HCP improves access to contraceptives for women in developing countries. This is done in a way that covers all our costs, thus ensuring that our work remains economically sustainable in the long term. We also promote educational programs on sexuality and family planning and participate in the fight against what are known as Neglected Diseases by making our active pharmaceutical ingredients available for research, development and treatment.

The following pages will give you an impression of how diverse and challenging these tasks are. We wish you an exciting and informative read.

Klaus Brill

CONTENT

06 – 19



FAMILY PLANNING

Contraceptives are a blessing

How we combine social responsibility with economic sustainability

PAGE 6

Long-term protection

Annette Velleuer, HCP, on the advantages of Bayer's contraceptive implant Jadelle

PAGE 15

A sign of our expertise

Peter Essen, Bayer Oy, Finland, on the production of Jadelle at Bayer's Turku site

PAGE 16

20 – 27



NEGLECTED DISEASES

Two strong pillars

Why we focus on both proven drugs and new therapies

PAGE 20

Every case of the disease is a drama

Jean Jannin, WHO, on Chagas disease

PAGE 25

A decade of important improvements

Jean Jannin, WHO, and Ulrich Madeja, HCP, on the cooperation between Bayer and the WHO

PAGE 26

28 – 37



REPORT

The bite of the tsetse fly

How our commitment helps patients with African sleeping sickness

A report from northern Uganda

PAGE 28

A close-up portrait of a smiling woman, Fatuma Aman, wearing a red headscarf and a purple patterned garment. The background is a soft-focus green curtain.

FAMILY PLANNING

Contraceptives are a blessing

Making safe family planning possible in developing countries is a challenging task – economically, logistically and culturally. It is the task that HealthCare Programs and their international partners focus their expertise and enthusiasm on.

Fatuma Aman, housemaid from Adama, asserts her right to self-determined family planning despite religious and cultural barriers: »Anything else would be irresponsible.«



Main road into Addis Ababa, Ethiopia's capital. In 2011, 50 percent of Ethiopian city dwellers used contraceptives. The figure was much lower among the rural population at 25 percent.

»Supplying women in developing countries with contraceptives is a balancing act,« concludes Wolfgang Becker-Jezuita.

He is responsible for oral and injectable contraceptives at HealthCare Programs (HCP). »Every day we have to find the right answers such to questions as: What quantities of contraceptives are needed and where? When will they be picked up by our cooperation partners? What financial resources do our customers have at their disposal? What impact might an economic crisis have on those resources? What geographic factors can prejudice the delivery of contraceptives? And above all, what political disruptions could thwart all our plans?«

Bayer has been dealing with questions such as these for half a century. Shortly after the former Schering AG introduced the hormonal contraception pill in the early 1960s, that company recognized – and took on – the social responsibility that went along with this groundbreaking development. That was when the foundation stone was laid for our worldwide cooperation with governments and non-governmental organizations (NGOs) dedicated to family planning in developing countries. Another fundamental decision was taken at the same time: not to donate contraceptives for this purpose from our leftover stock, but to specifically produce and sell them at a greatly reduced, but cost-covering price.

As Wolfgang Becker-Jezuita explains: »This approach enables us to maintain our support for family planning sustainable.«

The participating aid agencies guarantee 80 percent of the minimum shelf life to the women in developing countries when oral contraceptives are distributed or sold to them. However, the process of manufacturing contraceptive pills takes several weeks – forming the ingredients into tablets in Weimar, filling the blister packs, final packaging in Berlin, storage in Velten. For this reason the entire process must be planned very precisely.

Burga Bilgic-Torchalla and Ximena Granzow are in charge of this difficult task in the HealthCare Programs department. They process incoming orders with the aim of always filling the stores with the required number of contraceptives. More than 120 million cycle packs of contraceptive pills and about 10 million ampoules for one- and



Wolfgang Becker-Jezuita, responsible for oral contraceptives and contraceptive injections at HealthCare Programs.

three-month injections were distributed in this way in 2012. This is a huge amount, but not enough to cover the needs of women in developing countries. So today, there is a whole alliance of different contraceptive manufacturers working together with NGOs and government organizations trying to meet these needs. After all, the use of contraceptives means fewer child deaths, better maternal health, and improvements in the families' financial situation.

When HCP receives an order for delivery of oral contraceptives, the amounts and package sizes requested by the agencies are delivered to the respective countries. Then the agencies either distribute the goods free in collaboration with local health authorities, or sell them to women at a very low price via pharmacies.

Bayer's pharmaceutical responsibility does not end when the contraceptives are delivered, so we have created a clear set of rules explaining to our contracting parties how to assure the quality of the products during all the other steps, such as re-packaging or distribution. Corresponding controls ensure compliance with the standards we have developed.

However, the coalition of helpers have to live with one uncertainty: financing from aid agencies cannot be relied on at all times. Even the most generous of donor countries may be temporarily forced by a natural disaster to reduce its payments in favor of domestic aid projects. And even the most dedicated of government organizations can fall victim to budget cuts in the wake of an economic crisis. Then there is the risk that the strategy of HealthCare Programs is specifically designed to avoid: that women in the affected countries might lose their protection against unplanned pregnancy because their subsidized contraceptives are suddenly no longer available. >



Photograph, above, left: Bertukan Michael, 50, mother-and-child nurse at the Governmental Health Center, Adama, Ethiopia: »Contraception was almost unknown in the 1990s. That has improved in the meantime.«

In 2009 Bayer and the United States Agency for International Development (USAID) together founded the Contraceptive Security Initiative (CSI) to help be able to guarantee the consistent availability of contraceptives in developing markets. It's an alternative to subsidizing access to oral contraceptives, and one that is economically sustainable and therefore more reliable in the long run than subsidies.

Ariane Püttcher, Manager for Family Planning at HCP, is enthusiastic about the initiative. »Our contraceptive pill, which we sell on the private market, is too expensive for many women in developing countries,« she explains. »This is why we have adjusted our supply price for a similar product in such a way that pharmacies can offer the contraceptive pill at a price that is in line with the financial resources of middle-income women. At the same time we are covering our costs, so that we can still guarantee continuous deliveries after the contractually agreed period.«

Ulrike von Gilardi, Senior Manager for Family Planning at HCP, outlines additional advantages: »Women not only avoid long waiting times in public hospitals' dispensaries, but also they steer clear of availability bottlenecks that may occur

when products are distributed free. Nobody sees them queuing, so they aren't at risk of being perceived as poor. And many like the feeling of being able to afford the pill with their own income.«

The contraceptive pill will be introduced in eleven sub-Saharan countries within the next five years under the agreement between Bayer and USAID. In fact, it has already been successfully launched in Ethiopia, Uganda, Tanzania, Rwanda and Ghana.

»So many product launches in such a short time, of course, presents a huge challenge,« says Ulrike von Gilardi. At the same time she is delighted because, she says, »It's a great pleasure to be working internationally with highly-motivated teams in these countries. Apart from this, we're receiving positive response from all sides for the project's sustainable approach.« USAID is funding the communication and educational measures supporting the introductory phase of each country's program. The aim over the initial five year collaboration is to reach the necessary brand presence in project countries, and to ensure that local women can rely on the product being consistently available in the pharmacies. In return, Bayer guarantees that it will continue offering the product at the agreed price beyond the formal end of the project's contract period. >

Photograph, above, center: Shanty Town in downtown Addis Ababa. City of extremes with grand, commercial buildings rising from amongst shanty huts, and children begging in front of fashionable cafes.

Photograph, above, right: Entrance gate to a Marie Stopes clinic in Addis Ababa. The NGO's centers offer women professional support in family planning, abortions and births, among other services.



Ariane Püttcher, Manager for Family Planning at HCP

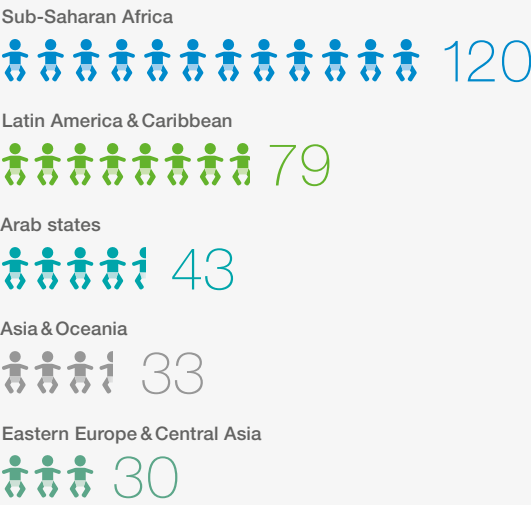


Ulrike von Gilardi, Senior Manager for Family Planning at HCP

FACTS & FIGURES

Family planning worldwide

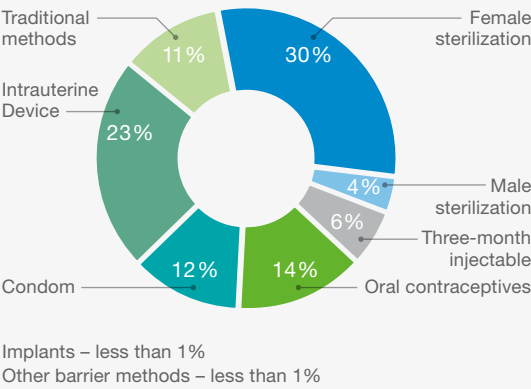
Birth per 1,000 women at the age of 15 to 19



Unmet needs in family planning are highest among 300 million young women at the age of 15 to 19. This deficiency in family planning leads to a huge number of teenage pregnancies.

Contraceptive methods worldwide per use

Percentage of total: Figures are for 2009



An increasing number of women want to control number and point in time of their births themselves, but are concerned their husband could be against. For this reason, some women use »invisible« family planning methods like three-month injectables secretly.



Solomon Betre, 56, pharmacist from Addis Ababa: »Contraception is a question of income and education.«

Just as innovative as the CSI is a project whose foundation stone was laid in the summer of 2012. On July 11, representatives of governments, civil society and private business from all over the world met at the London Summit on Family Planning. They were looking for ways of giving women in developing countries better access to sex education and contraception.

A few weeks later, an initiative involving the Norwegian, British, Swedish and US governments, the Clinton Health Access Initiative, the Children’s Investment Fund Foundation and Bayer, among others, announced their intention to supply a reliable and reversible long-term contraception method to 27 million women in developing countries for an initial period of six years: Jadelle, a contraceptive implant effective for up to five years that has been prequalified by the World Health Organization (WHO) since 2009. Prequalification is a seal of approval that certifies the product’s safety and efficacy. Bayer produces Jadelle in Turku, Finland (see interview on page 16). >



Mountain landscape near Addis Ababa, Ethiopia. People in the countryside don’t talk about sexuality, neither among friends, nor within the family. Cultural taboos prevent it.



Health post near Adama, Ethiopia. If it were not for government hospitals like these, people in rural areas would have no access at all to healthcare or medications.



Sy Nuy Talib, 24, mobile health adviser: »Every day I see how many women I help, how I change their lives. I love my job; it's extremely important for our country.«

Annette Velleuer, responsible for long-term contraceptives at HealthCare Programs (see interview on page 15), is impressed by the determination with which the partners forged ahead with this project: »They only took a couple of months to get from the idea to its realization. The contract already entered into force on January 1, 2013.«

Bayer had reduced the price of Jadelle from US\$ 18 to US\$ 8.50 to make the Jadelle Access Program possible. In turn, the contracting party, the Bill & Melinda Gates Foundation, covered the risk of default.

Annette Velleuer, explains the program like this: »We don't sell the contraceptives to the women; rather, our cooperation partners first analyze where the need is greatest. We then deliver to the respective developing countries on behalf of the aid agencies. There, the contraceptives are provided free of charge. Thanks to this joint engagement, all the more women can now benefit from contraception using Jadelle!«

The example of Ethiopia illustrates how much individual suffering is relieved in this way and how many social improvements are achieved by such decisions. Sy Nuy Talib is absolutely convinced that »contraceptives are a blessing for our country!« She is a mobile health officer who advises women in the region around Adama, a city of 220,000 inhabitants 90 kilometers southeast of Ethiopia's capital Addis Ababa. »Birth control makes women's lives easier in ways that you can hardly imagine if you don't know much about their daily lives.«

More than a third of all Ethiopians live on less than a dollar a day. Half of them are malnourished. Two thirds can neither

read nor write. There are mud tracks lined with shanties even in downtown Addis Ababa. Ragged beggars and street children are as much a part of the scene on the few boulevards as emaciated donkeys, cows and goats. As recently as 2011 the country again fell victim to a catastrophic drought. In December of the same year the inflation rate was 33 percent. In rural areas every woman has more than five children on average. As a result more than two million babies are born into these difficult conditions every year.

»Many parents can't feed their children or send them to school,« says pharmacist Solomon Betre, describing the effects. >

INTERVIEW



Annette Velleuer

is responsible at HealthCare Programs for long-term contraceptives, especially for the Jadelle implant. She works with Production in Finland and keeps in contact with customers such as large international aid agencies. She also collaborates with health ministries and medical personnel in the development of family planning programs for developing countries and programs to train staff in the proper use of Jadelle.

Ms. Velleuer, what is Jadelle?

Jadelle is a contraceptive implant that is inserted into the inner side of the upper arm. It's a minor surgical procedure carried out under a local anesthetic and is painless for the woman patient. The implant protects her against pregnancy for up to five years. If she decides she would like to have a child after all, Jadelle can be removed at any time and she can become pregnant within a few months.

What happens after HCP has delivered Jadelle to the countries indicated by the customers?

Our responsibility doesn't end when the product is made or delivered. We also offer aid agencies courses to train doctors, nurses and midwives in the application of Jadelle: for example how to insert and removed the implants properly. We use comprehensive information and role plays to give them all the knowledge they need to advise their women patients.

These training sessions don't focus only on Jadelle, but provide information about all contraceptive methods, so that a woman can decide for herself after a consultation which method she would like to use: an implant, an oral contraceptive, a one-month or three-month contraceptive injection, all of which HCP also sells to the agencies.

Why do women in developing countries decide in favor of a long-term contraceptive like Jadelle?

Many of the women already have four or five children, even though they are only in their early or mid-twenties. They either have no access to contraceptives or have to walk very long distances every time to access an oral contraceptive or have a contraceptive injected. A long-term contraceptive that is effective for up to five years means a great relief in their daily lives.

Apart from which, an implant is very discreet. Many women have to be secretive about contraception because their husbands reject the idea – either for religious reasons or because they believe that a woman who uses contraception cheats on her husband. In both cases, many women are subsequently exposed to physical violence.

What do you like best about your job?

In addition to the many international contacts, it's the fact that I'm contributing something meaningful to family planning in developing countries. I can help women there to gain greater self-determination and freedom and in this way improve their lives in small steps. I find out very directly how important this is from the reactions I hear from the women and the medical staff.



Pharmacist Nemayehu Dhabu and his Time Pharmacy in Adama, Ethiopia: »A month's supply of birth-control pills costs 10 birr, the price of a cappuccino in a modern cafe.«

Tefetawit Gebre Aregawi, 24, health officer: »A friend of mine became pregnant at the age of 14. She had an illegal abortion – and died from the effects of the operation.«

INTERVIEW



Peter Essen

works at Bayer Oy, Turku, Finland. Among other things he is responsible for the production of the reversible long-term contraceptive Jadelle.

Mr. Essen, what does the Jadelle Access Program mean for you personally and for Bayer Oy?

I'm very proud that we can help achieve such a marked improvement in the lives of women in developing countries. Jadelle is one of the most effective contraceptives. But I'm also proud of our technology, because that makes it all possible. We developed it ourselves here in Finland. It's quite complicated and an indication of our expertise. We've been manufacturing contraceptive implants since 1979, and the guaranteed purchase of 27 million units of Jadelle shows us how well accepted this contraceptive method is in the meantime. At the same time this represents a great challenge. We will have to double our pro-

duction capacity for Jadelle, hire a lot of new employees, train them very well, and invest in new equipment.

Are you aware of the kind of lives the women lead who will now be using Jadelle?

We've had feedback from the aid agencies, so we know what Bayer's commitment can achieve. This is exactly the reason why I applied for a job here after graduating in chemistry 32 years ago: back then I already had the feeling that you can work in the pharmaceutical industry for the benefit of people and really do something good. We're definitely on the right track with the Jadelle Access Program.

> »We often first have to explain to our customers what family planning is and that you can talk openly about it. It's a taboo subject – for cultural and religious reasons.«

»When the women come to me,« explains Tefetawit Gebre Aregawi, Health Officer in one of Adama's four health centers, »I always have to bear in mind that they are afraid to talk to me. I try to reach them on a human level, not at the official level. Only when they open up a little can we talk about family planning.«

Educational programs, the free distribution of contraceptives in public health facilities, and the availability of cheap contraceptives in all pharmacies bring initial positive changes. According to surveys conducted by Ethiopia's Central Statistical Office in 2011, half of all city dwellers and a quarter of the country's rural population now practice birth control. This means that the number of women using contraceptives has quadrupled over the last decade, which is a great success. In the younger generation even the men are willing to talk about the subject in the meantime.

Fikirte Disasa, now 22, got married as a teenager. »I was still at school at the time and didn't know anything at all about family planning,« she recalls. »My husband told me about it. He suggested we should use contraceptives until I finished my education and not have children until afterwards.«

Fikirte has a six-month-old son in the meantime. »I don't want another child,« she explains, as she happily balances the little one on her knee, »because I have a very low income. I want my son to have enough to eat, to grow up healthy, go to school and get an education. I'm responsible for that.«

Fatuma Aman's attitude to her situation is similarly well-thought-through. She too uses contraceptives, albeit against her husband's will – a courageous thing to do in a conservative country like Ethiopia. She stands proudly outside her house in a village about 100 kilometers from Addis. She is surprisingly willing to talk about family planning and the difficult situation in which she finds herself: »My husband wants me to stop using the contraceptives and to bear him a child. But that would be irresponsible in our economic situation.« Then, with an >

Fikirte Disasa, 22, cleaner, uses contraceptives out of a sense of responsibility for her son, even though having lots of children is regarded as sign of fertility and a status symbol in Ethiopia.



Fatuma Aman, housemaid from Adama, in front of her house. Despite the conservative customs in Ethiopia she readily and openly talks about family planning.

> expression of peaceful self-assurance on her face, she adds:
»I'm extremely grateful that there are contraceptives. They're part of my personal freedom!«

It's hardly surprising, therefore, that the entire team at HealthCare Programs have one thing in common: the mixture of competence, commitment and empathy with which they all do their work. <

FACTS & FIGURES

Family planning drives global development



Family Planning goes far beyond the self determined decision, if and when a women is having a child. It is an important component for global health and development.

Source: 2013 International Conference on Family Planning and Global Health Strategies



NEGLECTED DISEASES

Two strong pillars

Neglected tropical diseases affect mainly poor people in developing countries. They kill hundreds of thousands of people every year and cause damage worth billions of dollars. Bayer is part of an alliance of committed helpers.

Alando Adams, 25, unemployed:
»When I found out that I had tuberculosis,
I immediately had to think of my children.
It's a terrible thought that I might die and
leave them behind.«

Blikkiesdorp, Cape Town, South Africa. 1,700 windowless tin shacks neatly arranged in rows. Up to ten people, often from several families, share 18 square meters.



»Bayer's commitment is based on two strong pillars: one is family planning, and the other is the fight against Neglected and Tropical Diseases,« explains Ulrich Madeja.

At HCP he initiates and coordinates cooperation with partners such as the World Health Organization (WHO). »In both of these fields we have the expertise, the right product portfolio and effective collaborations.«

For example, in the fight against tuberculosis (TB), Bayer HealthCare has been supplying the non-profit organization »Global Alliance for TB Drug Development (TB Alliance)« with its active substance moxifloxacin free of charge. The TB Alliance is currently conducting the world's largest clinical trial on TB. Its aim is to prove that moxifloxacin, in combination with three other established drugs, can reduce the current standard time for treating this infectious disease from six to four months.

A shorter period of treatment would be a great relief for patients. It could help reduce the number of people who discontinue their treatment early and thus prevent the development of

drug-resistant pathogens. If the study yields positive results, Bayer will apply for the approval of moxifloxacin to treat TB, so that physicians and patients can benefit from it as quickly as possible.

Professor Andreas Diacon of the University of Stellenbosch in Cape Town is involved in the REMoxTB study. He describes one of the great misunderstandings in the history of medicine: »Actually, since ever the 1970s people had thought that tuberculosis had been defeated. After the first drugs had been developed in the fifties and a standard treatment in the sixties, the disease seemed to have been consigned to the history books.«

This assumption was wrong. In fact, a third of the world's population are latently infected with tuberculosis today. One person contracts the disease every second. And when the bacteria are resistant, the chances of recovery fall dramatically.

»Interrupted or incorrect use of the drugs, their lack of availability in developing countries, and different degrees of effectiveness in different organisms – all this has meant that the disease has never completely disappeared; bacteria kept on emerging that were resistant to the tried-and-tested drugs,« Diacon explains. »That's why we urgently need new drugs.« >



Most TB patients have no idea that the disease can be passed on just by talking, sneezing or coughing. Posters like this aim to raise awareness.



Professor Diacon, University of Stellenbosch, Cape Town, South Africa: »We often have to explain to our patients that TB is a disease – not magic, not a judgment, and not a curse from God.«



Taharqa Elnur, 27, is a community engagement coordinator at Professor Diacon’s Task Applied Science organization. He recruits study participants and makes sure they are properly informed and taken care of.



TB test at the high-security laboratory, University of Stellenbosch, Cape Town, South Africa. This is where the samples from Professor Diacon’s patients are examined.

FACTS & FIGURES

At a glance: Global tuberculosis incidence rates 2010

Number of cases worldwide



Transmission



Course of the disease

Not every infection with the tubercle bacillus automatically leads to an outbreak of the disease: people with weakened immune systems – e.g. with a simultaneous HIV infection – are the most vulnerable. In the course of the disease, TB damages the lungs and other internal organs. If left untreated, it is often fatal or causes permanent damage.

The main things that need to be done

The approved drugs are often hardly effective any more because of the growing number of resistant bacterial strains. There is an urgent need for new drugs against tuberculosis which effectively combat the resistant bacteria and help avoid the emergence of new resistance by shortening the duration of therapy.

> In order to speed up this search, Bayer joined forces with six pharmaceutical companies, four research institutes and the Bill & Melinda Gates Foundation in 2012. Within this partnership Bayer is providing access to suitable parts of its compound library for research in discovering new therapies.

The partners are pooling their experience and resources with the long-term objective of developing a therapy that will cure TB patients in just one month.

Until this drug is found, Bayer and the World Health Organization are making it possible to use moxifloxacin against multi-drug-resistant tuberculosis (MDR-TB) within the framework

of the WHO’s »Stop TB Partnership« even before its official approval. MDR-TB is especially difficult to treat because its pathogens are resistant to several of the standard active pharmaceutical ingredients currently in use.

In the fight against Neglected Tropical Diseases (NTDs) Bayer has been making its drug with the active ingredient nifurtimox available to the WHO for ten years now and guarantees a constant supply. Nifurtimox is one of two drugs that are according to the recommendation of the WHO used during the acute phase of Chagas disease (*see interviews on page 25 and 26*). Since this acute form of the disease occurs primarily among children, nifurtimox is on the WHO’s list of »Essential Med- >

INTERVIEW



Jean Jannin

When he was a young man, Jean Jannin used to dream of living in Africa. He studied medicine and tropical medicine in Paris. He then left France to realize his dream and practiced in Africa for eleven years. As a specialist in public health he worked for the French Ministry of Health before joining World Health Organization (WHO) in 1995. Today he is responsible for the intensified disease management unit fighting against a number of Neglected Tropical Diseases (NTDs) at the WHO in Geneva.

Mr. Jannin, what is Chagas disease?

Chagas disease is a parasitic disease that is transmitted mainly by blood-sucking bugs; it is also passed on from infected mothers to their unborn children by blood transfusions and organ donations. Originally it only occurred in Latin America, but it can now be found, for example, in North

America, Europe and even Western Pacific, as a result of population movements.

Chagas disease begins with an acute phase, during which the infection can be diagnosed, treated and cured. The challenge is that most cases present unspecific symptoms (such as fever or malaise) or no symptoms at all. After several weeks the early symptoms disappear and a symptom-free latency period begins; this can last for decades. During the subsequent chronic phase the patients have severe, sometimes fatal heart and gastrointestinal problems.

How can the disease be combated?

During the acute and early chronic phase you try to kill the parasites. This is carried out using two drugs, one of which is nifurtimox from Bayer. During the late chronic phase these drugs no longer help as much as in the first stage. Then you have to treat the after-effects of the disease, which is very complex and sometimes only possible by surgery or organ transplant.

In addition, we are trying to kill the bugs, the main carriers of the disease. We have been very successful at this in Latin America.

What special challenges do you have to face in this battle?

Chagas disease is one of the Neglected Tropical Diseases. Although the number of patients goes into the millions, yet every

case of the disease is a drama. It not only affects one person, but always a family, perhaps a community, sometimes even an entire country. Even so, not enough research being done. For a long time there wasn’t enough money available for the fight against the disease. Furthermore, the international community doesn’t take on responsibility for the affected minorities: the people who live in the Amazon forest, or the poorest of the poor in the major cities. Yet we also have a duty to give these people the best possible access to treatment.

What exactly does that mean?

People need a lot more than just drugs. A truckload of drugs standing in front of the WHO building in Geneva doesn’t help anyone. People need access to comprehensive healthcare structures, and that involves providing all kinds of things: someone with the necessary training to diagnose the disease, instruments, a place like a hospital, the drugs of course, but also the ability to treat clinical manifestations or complications and to follow patients up, and the logistics, which is very important – and all this also in places that are difficult to reach.

> icines.« Bayer is developing a new form of administration to make a more individual dosage of the active ingredient possible which is more suitable for children.

Since 2012 Bayer has intensified its involvement and doubled the number of nifurtimox tablets provided free of charge – to a million a year. Bayer supplies the WHO with another 400,000 tablets a year because clinical studies supported by Bayer have furthermore shown that, in combination with another drug, nifurtimox is an effective treatment for the West African form of sleeping sickness (*see report on page 28*).

This combination therapy is also on the WHO’s list of »Essential Medicines,« as is Bayer’s compound suramin, which is used to treat the rarer east and south African form of sleeping sickness. Since 2002 Bayer has been supplying the WHO with 10,000 ampoules of suramin a year free of charge.

Explaining Bayer’s commitment, Ulrich Madeja says: »However, because we know that drugs alone are often not enough, we also provide financial support for logistics, distribution and training. This combination optimizes the chances of success in fighting Neglected and Tropical Diseases.« <

INTERVIEW



Jean Jannin and Ulrich Madeja

Jean Jannin, WHO (*see interview on page 25*), and Ulrich Madeja, HCP collaborate closely in the fight against Neglected Tropical Diseases (NTDs).

Mr. Jannin, Mr. Madeja, at the end of the last century the fight against NTDs came up against a crucial turning point. What happened back then?

Jannin: At that time all major pharmaceutical companies were thinking about stopping their production of the old drugs against NTDs as well as their research. The patients couldn’t afford to pay for the drugs. The donor countries that had financed the fight against the diseases up to then were turning their attention to larger problems such as AIDS.

This affected suramin, for example, one of the most important active pharmaceutical ingredients against African sleeping sickness. It has been in use since the 1920s. We asked Bayer not only to ensure the availability of suramin, but also to reduce its price. Bayer agreed to supply the product to the WHO free of charge. That marked the beginning of our collaboration, which has now been ongoing for ten years and which we are very happy with.

Madeja: We make nifurtimox and suramin, two important drugs in the fight against Chagas disease and African sleeping sickness, almost exclusively for use by the World Health Organization. We are doing this, because we committed ourselves to take part in the fight against these diseases.

What are the benefits of your cooperation?

Jannin: Ten years ago it was a nightmare to get hold of drugs to treat Chagas disease or sleeping sickness. Today, all I have to do is write an email saying how much I need and where. It’s fantastic! People laughed at me ten years ago when I talked about eliminating African sleeping sickness. Today we’ve achieved a tenfold reduction in the spread of the disease using the medication provided, and everyone

expects the disease to be finally defeated by 2020.

Madeja: To really achieve this goal, we have just initiated a joint, three-year project to send out mobile intervention teams, even to remote areas, to look for and treat the sick people there.

What challenges do you face now?

Jannin: The biggest problem is how to maintain the scale and quality of our work when case numbers fall to, say, 100 or 50. These cases must also be treated with the same intensity if we are to finally and permanently eliminate the disease. In addition, we ask ourselves: can we expect companies like Bayer to invest in new drugs if no one knows if they would only be used for a very limited number of cases?

Madeja: In response to this challenge we have begun to selectively open up of compound library active pharmaceutical ingredients with millions of molecules to other companies and organizations – like in our project to search for a new treatment for TB. In this way we can also jointly develop new therapeutic approaches against NTDs.



MDR-TB patients are isolated and looked after 24/7 at the Brooklyn Chest Hospital, Cape Town, to prevent the spread of the disease.

FACTS & FIGURES

At a glance: Worldwide distribution of Chagas disease 2006 – 2009

Number of cases worldwide



Transmission



The Trypanosoma cruzi parasite is transmitted mainly by assassin bugs, whose infected feces find their way into the wounds left by the insect’s bite or are transmitted through the mucous membranes. Infection is also possible via food or infected blood used in transfusions, organ transplants or during childbirth.

Course of the disease

During the acute stage (up to about two months after infection), which is characterized by flu-like symptoms, the disease is completely curable with drugs. During the chronic stage, progressive organ damage develops over several years; the result is often a sudden cardiac death.

The main things that need to be done

Combat the assassin bug; monitor stored blood and donated organs; run early-diagnosis and early-treatment programs in areas that are at risk; screen pregnant women to avoid mother-child transmission during birth. Available therapies: benznidazole, nifurtimox.

REPORT

The bite of the tsetse fly

African sleeping sickness not only makes people tired – it kills. Its victims are socially ostracized, and treatment used to involve almost unbearable side effects. But there is now hope from a new therapy.

Samuel, 8, has almost recovered from African sleeping sickness, but still shows symptoms: he grimaces, tells incomprehensible stories and behaves erratically.



Moses, 28, farmer still has symptoms of sleeping sickness: when he speaks, his tongue and lips twist and turn the words, as though they were too big and bulky for his mouth.

»I'm proud that I can think clearly again, thanks to the treatment,« says Moses. A smile creeps across the twenty-eight-year-old farmer's face – reflecting his happiness – and then suddenly slips.

Uncertain, he tries to regain control of his features. »Still, it will take another one or two years before I'm really healthy again,« he explains. His eyes wander over the fresh green of the patch where his family grows corn and cassava. »I can't clear the fields yet, because my hands are too weak and keep trembling. I don't yet know what I shall do for a living.«

Moses suffers from the aftereffects of African sleeping sickness, which begins with headaches, joint pain, fever and abnormal fatigue. »Most patients think it's enough just to take pills to deaden the pain,« reports Olema Erphas, 38, clinical officer and director of the Omugo Health Center in the extreme north-west of Uganda. »The fever is often wrongly diagnosed as

malaria, but malaria drugs have no effect. The physicians then have no idea what to do next. This is followed by a long ordeal and eventually the death of the patient.«

Olema has been working at the Omugo Health Center since 1995 when it was expanded into a clinic for sleeping-sickness patients by Médecins Sans Frontières. This disease, which had seemed defeated since the 1960s, had broken out again in Uganda. The self-styled resistance fighter Joseph Kony and his Lord's Resistance Army had been terrorizing the people in the north of the country; 90 percent of the population were displaced. The deep-red, fertile farmland became overgrown with bushes again, turning it into a perfect habitat for the tsetse fly, the vector of sleeping sickness.

The farmer Yusuf, 38, lives in a house made of air-dried bricks. It stands exactly where he was stung by a tsetse fly in 1993, on the overgrown banks of a small river. This is the preferred habitat of the fly – and of all farmers. It is where they clear and cultivate their land, where they fish and hunt, fetch water and collect firewood. These tasks are mostly performed by women, making them especially vulnerable – and the small children they carry on their backs in colorful cloths. >



Olema Erphas, 38, Director of the Omugo Health Center: »We need to raise awareness of the disease and make it part of standard medical knowledge.«



Yusuf, 38, farmer, has been informed that the colors blue and black attract tsetse flies and can provoke an attack. Nevertheless, he is wearing a bright blue shirt with a black pattern.

> This is exactly what happened to nine-year-old Adomaté seven years ago. She is nothing but skin and bones, sleeps almost constantly, does not eat, does not talk. She can barely move, let alone stand upright. Her desperate parents keep watch at the head and foot of her bed in one of the wards at Omugo. They haltingly admit to having consulted a traditional healer.

»The healer had a vision,« Adomaté’s father mutters. »Said I had made myself guilty after my mother died because I couldn’t afford to make the payments to my relatives that our culture demands. He recommended that I should sacrifice three chickens and pray with my relatives. Then my daughter would get well again. But the symptoms got worse.«

Olema, who recently started treating Adomaté, is more satisfied with the child’s progress than with her parents’ behavior. For years he has been fighting the superstition that sleeping sickness is a misfortune caused by one’s own misconduct or that of one’s ancestors. »Adomaté is now being artificially fed with high-energy preparations,« he explains. »This creates a good basis for the new combination therapy using two drugs.«

The team at Omugo Health Center was instrumental in discovering this therapy. After physicians from Médecins Sans Frontières had correctly diagnosed Yusuf – one of the first patients in Omugo – in the mid-nineties, they treated him with an arsenic compound. It was the only drug available against the second stage of the disease, from which Yusuf was already suffering; the pathogens had penetrated into his central nervous system.

»At first I felt a horrible itching all over my body. My skin was as white as ash from all the scratching,« he recalls. »Later, I lost a terrible amount of weight, had nightmares and started talking to myself. I would start arguments and fights for no reason, so that people began to be afraid of me. Then I became apathetic and was always falling asleep – sometimes even at work or in the middle of a conversation.«

This is how destructive the disease is, and how toxic the arsenic compound is. It’s not approved in Germany because it has such side effects as skin rashes, nausea and vomiting, cramp, fever, fainting, and blood in the stool. And as if that wasn’t enough, about five percent of patients die not from the disease, but from the medication.

>



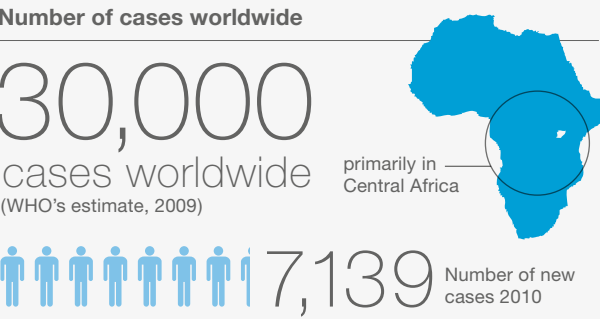
Adomaté, 9, was infected with sleeping sickness at the age of two. Her condition is slowly improving. She is responding to speech, can open her eyes and sometimes even moves.



Village life in northern Uganda. The patients attending the Omugo Health Center come not only from here, but also from Sudan and the Democratic Republic of Congo.

FACTS & FIGURES

At a glance: African sleeping sickness



Transmission

The pathogens – the single-celled parasites *Trypanosoma brucei gambiense* (West and Central Africa) and *Trypanosoma brucei rhodesiense* (East and South Africa) – are mainly transmitted to humans in the saliva of the tsetse fly.

Course of the disease

The pathogens infect the brain and the central nervous system. Typical symptoms include confusion, sensory disturbances, coordination difficulties – and coma in the final stage. African sleeping sickness is fatal if it goes untreated.

The main things that need to be done

Rigorous screening, the provision of drugs in the affected areas as well as a consistent control of the vector. Available therapies: suramin, pentamidine (stage 1); melarso-prol, eflornithine; combination therapy with nifurtimox and eflornithine (stage 2).



Moses, 28, farmer. Because sleeping sickness sufferers behave strangely, they are regarded as jinxed, and people avoid them. Moses has been lucky: his family and friends have stood by him.




Waiting area of the Omugo Health Center in northern Uganda, which has been specializing in the diagnosis and treatment of African sleeping sickness since 1995.

So several NGOs and the World Health Organization got together in 2003 to finally find an alternative, and initiated a research program on Tropical Diseases. In clinical studies they tested the combined use of nifurtimox from Bayer and eflornithine from Sanofi-Aventis, drugs which had originally been developed to combat Chagas disease and cancer respectively. »From 2005 to 2008 we, too, conducted such a study,« says Sanda Tuteu, nurse at Omugo Health Center. Triumphantly the lady in her mid-forties holds the drugs aloft: »Today we no longer have the dreadful side-effects like the ones caused by the arsenic compound, and we have managed to dramatically shorten the treatment. All the patients become healthy and happy again!«

This also seems to apply to Moses, the young farmer: his family, friends and neighbors stuck by him from the outset. Their support, affection and warmth are tangible. Sitting in their midst, he says something that applies to himself, to the fight against sleeping sickness, and hopefully also to his beautiful, battered country and its friendly people, who have been so deeply terrified by their recent history: »I've not fully recovered yet, but it's gradually getting better.« <



Alfred Ayoma, lab technician at the Omugo Health Center, Uganda, the only hospital for many miles around where patients with African sleeping sickness can be treated.



»After they have recovered,
some of the patients return
to the clinic especially to give
us presents. We are very
proud of our work because
people will remember us!«

Sanda Tuteu, nurse at the Omugo Health Center in
northern Uganda since 1995, when Médecins Sans
Frontières expanded it into a clinic for sleeping-
sickness patients.

CONTACT

If you have any questions, please feel free to contact us:



Klaus Brill

Bayer Pharma AG
Corporate Commercial Relations
T +49 30 468 16985
klaus.brill@bayer.com



Ulrike Schröder

Bayer Pharma AG
Corporate Communications
T +49 30 468 192206
ulrike.schroeder@bayer.com

For further information,
please also visit our website at
www.bayerpharma.com

IMPRINT

Published by

Bayer Pharma AG
Corporate Communications & Public Affairs
Oliver Renner
Müllerstraße 178, 13353 Berlin, Germany

Concept, Text and Photos

matias boem
plankton-media
Katzhagen 5c, 25436 Uetersen, Germany
info@plankton-media.de

Layout

atelier hauer+dörfler gmbh
Charlottenstraße 17, 10117 Berlin, Germany
www.hauer-doerfler.de