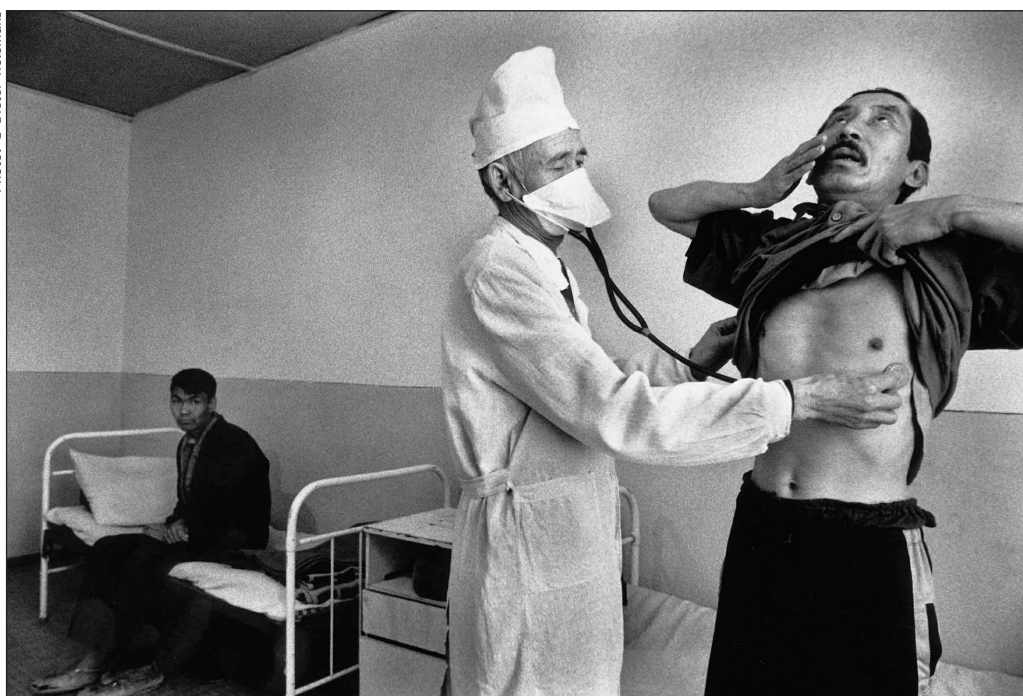


TUBERCULOSIS

Many people in rich countries think of tuberculosis as a disease of the past. Indeed well until the 1980s, many experts thought that TB could be eradicated in a matter of decades.

But with around nine million new cases appearing every year, tuberculosis is far from defeated. TB is a deadly killer, responsible for nearly two million deaths every year - that's almost four lives claimed every single minute^[1]. 99% of these deaths occur in the developing world. Today, TB is a global emergency.

Photo: © Dieter Tielemans



TB is a contagious disease, and spreads mainly through the air like a common cold. Only one in ten people infected by the germ will actually develop the disease, as a healthy immune system will keep the infection dormant. These infections can reactivate years, even decades, later if the immune system is weak. With transmission accelerated by cramped housing conditions, and the activation of the infection facilitated by poor nutrition and general ill health, tuberculosis is a disease that hits the poor hardest.

Mycobacterium tuberculosis usually affects the lungs. Called pulmonary TB, this form of the disease is characterised by a persistent cough, shortness of breath and chest pain. Other symptoms include weight loss, fever and night sweats. Left untreated, each person with active pulmonary TB will infect on average between 10 and 15 other people every year. The mycobacteria can also infect almost any part of the body, such as the lymph nodes, the spine or bones. In this form, TB may not be contagious, but it is equally vital to diagnose and treat the disease rapidly, as all forms are deadly if left untreated.



MSF FACT SHEET

Diagnosis

The most widely used technique for diagnosing tuberculosis is no more sophisticated than examining a suspected patient's sputum sample under a microscope to assess whether it contains TB mycobacteria. Although this means diagnosis is cheap and possible even in remote areas provided you have trained staff, there are serious shortcomings associated with this method, as many people with active TB will not have sufficient TB mycobacteria in their sputum, or indeed will have none at all. This is true for patients suffering from extra-pulmonary TB and for patients co-infected with HIV. Microscopy is also of limited use for detecting TB in children, because they often do not produce enough sputum to make a reliable sample. Even in the best of hands, microscopy will only detect around half of all TB cases.

Another technique, known as culture, consists of incubating a sputum sample over a few weeks to see whether it contains live TB mycobacteria. Although this is a more sensitive method when performed correctly, it is unfortunately slow, as you need to wait at least around three weeks, and sometimes up to eight weeks, to be sure no mycobacteria are present. It is also logistically difficult, requiring incubators, a continuous power supply, and skilled staff.

More modern methods such as those relying on DNA tests, for example, are too sophisticated to be used in poor settings, precisely where tuberculosis takes its heaviest toll. "What we need is a simple test that tells you when you have active TB, which yields results almost instantly and can be used by any nurse or health worker even when far away from a laboratory", says Dr Francis Varaine of MSF. "At the moment there's nothing even remotely like this. Until we have a simple reliable test, many TB patients will keep falling through the net and die untreated".

Treatment

The need for a suitable diagnostic tool is all the more pressing considering tuberculosis is for the most part a curable disease. TB is treated with a combination of antibiotic drugs which were developed over 35 years ago. At around US\$ 15 to 20 per patient, the treatment course is cheap. To prevent the emergence of any resistance, the drugs should be taken in combination. It is therefore recommended that TB drugs are produced in fixed-dose combinations (different drugs combined in a single pill).

Treatment must be continued until all the mycobacteria are dead, which takes six months at the least. The patient must be encouraged to stick to the treatment until its completion, and not abandon the course as soon as the symptoms fade, which might be as soon as two weeks after the start of the treatment. The currently recommended "directly observed therapy", where the patient is supervised taking his or her medication by a health care worker or a community volunteer, places considerable strain on patients who sometimes have to travel several kilometres every day for several months to a health centre in order to receive treatment. Other approaches exist: encouraging a patient's responsibility and involvement in their treatment through education and counselling, and creating an adequate therapeutic environment. These more flexible approaches have demonstrated good results for other chronic diseases.

The drugs must also be of quality. This is often not the case, as substandard anti-tuberculosis drugs are widely available on the market in many countries. The World Health Organization is currently assessing the quality of drugs produced by different manufacturers, a valuable exercise which should enable developing countries to purchase "prequalified" drugs of guaranteed quality. Today, however, there are no prequalified

Tuberculosis and HIV: a lethal duo

Most people infected by TB mycobacteria will not develop active TB as their immune response works to keep the disease dormant. But as a person's immune system weakens, the tuberculosis infection can reactivate: this is precisely what happens with HIV. An estimated one third of the 40 million people living with HIV/AIDS worldwide are co-infected with TB. Tuberculosis is now the leading cause of death among people who are HIV positive: without treatment, about 90% of them will die within months of contracting the disease^[2]. We need to adapt our strategies to face this lethal combination, by offering counselling and voluntary HIV testing to TB patients, by actively screening HIV positive patients for TB, and by integrating health services for the two diseases. Diagnosis of TB cannot rely on microscopy alone – a more sensitive test is urgently needed so that patients can be started on treatment as early as possible.



sources of anti-tuberculosis drugs in formulations suitable for children, nor are there any prequalified sources of streptomycin, one of the drugs used against TB.

Drug-Resistant tuberculosis

An inadequate or incomplete treatment course and poor quality drugs are the major factors favouring the emergence of mycobacteria that are resistant to anti-tuberculosis drugs. This drug-resistant TB (DR-TB) has reached alarmingly high levels in many countries around the world, and is a serious global health problem. DR-TB is a particularly pressing emergency in Eastern Europe and Central Asia, but it is on the march in Africa, and because of globalisation, is also a growing threat in rich countries.

Diagnosis of DR-TB requires even more sophisticated technology than ordinary TB. The long delays necessary to get an answer are of great concern, and have a direct impact on the quality of treatment that is offered.

Treating DR-TB is equally difficult. None of the second-line drugs used against multi-drug resistant TB have prequalified alternative sources

identified by the WHO. They are less effective than first-line drugs, and must be taken for at least 18-24 months for multi-drug-resistant TB (MDR-TB). They are highly toxic, and can cause a range of serious side effects including hepatitis, depression, hallucinations and dizziness. The patient is often hospitalised for long periods, in isolation. In addition, the drugs are extremely expensive – depending on the choice of drugs, a treatment course for MDR-TB can cost around US\$ 15,000 per patient; and sometimes up to 3000 times more than a treatment course for ordinary TB^[3]. Finally, because of their limited production and the absence of a buffer stock, because of their short shelf-life, and because of customs and registration barriers, the supply of second-line drugs is extremely complex and erratic.

All these difficulties make the response to drug-resistant TB an uphill struggle. The World Health Organization estimates that there are around half a million new cases of MDR-TB every year^[4], but only a tiny fraction of them will have access to appropriate treatment. For many around the world today, catching or developing drug-resistant TB is effectively a death sentence.

MSF and TB

MSF has been confronted with tuberculosis since its first day of operations more than 30 years ago. In 2004, MSF treated around 13,500 patients in 24 countries around the world.

The settings in which MSF provides TB care vary widely. They include areas of chronic conflict, such as South Sudan or Somalia; refugee camps in Chad or Thailand; prison settings, in the Caucasus and Côte d'Ivoire; or primary health care settings, for example in Congo and Angola. The focus of the projects also vary: some concentrate on integrating HIV and TB services, such as in South Africa and Kenya; others offer treatment to patients suffering from drug-resistant tuberculosis,

as in Uzbekistan and Georgia; others reach out to particular populations who have little access to medical care, such as nomadic groups in Ethiopia.

MSF is striving to improve diagnosis of all TB patients, by introducing culture and other tools where possible and assessing the feasibility of more sophisticated diagnostic methods. In terms of treatment, MSF is currently exploring different ways of ensuring patient adherence, and is committed to using fixed-dose combinations and quality-assured drugs in its programmes. MSF also aims to integrate TB and HIV services where possible, and to treat drug-resistant tuberculosis in appropriate settings.

[1] Source: Global tuberculosis control: surveillance, planning, financing; World Health Organization; March 2005

[2] Source: World Health Organization. <http://www.who.int/tb/hiv/faq/en/index.html>

[3] Source: Draft Strategic Plan 2006-2015, Stop TB Working Group on DOTS-Plus for MDR-TB, available at "<http://www.stoptb.org/gpstab>"

[4] Source: Stop TB Working Group on DOTS-Plus for MDR-TB, op.cit., p1 and p5.

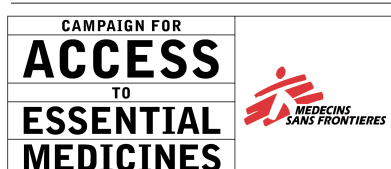
What needs to be done?

There is a desperate need for:

- new diagnostic tools that are simple, reliable, and field adapted to resource-poor settings;
- more potent drugs to shorten the length of treatment and address drug-resistant TB;
- and an effective vaccine.

Until that time:

- Governments and pharmaceutical companies must commit to funding research and development programmes that address these needs.
- Pharmaceutical companies must actively participate in the WHO prequalification process to ensure that prequalified sources for paediatric formulations, for streptomycin, and for second-line drugs, are identified.
- WHO and the Stop TB Partnership must keep sounding the alarm: tuberculosis is not under control and more resources and commitment are needed.



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