

# EDITORIAL

## Extensively drug-resistant tuberculosis and prison population

Tuberculosis has been with us since prehistoric times. It accounts for thousands of years of war between humans and bacilli, as well as for millions of deaths on the male side. Great and distinguished doctors have, on many occasions, announced the beginning of the end, the close defeat of the mycobacterial underworld. Not only were they great and famous doctors but also bad prophets. In this thousand-year-old war, everything mutates, nothing remains the same, what was good yesterday is useless today. Tactics, strategies change as much as the rules of war, the arms used and the different places where the battles are fought. Faced with natural selection, humans and bacilli respond with mutations. New individuals are born. The most sensitive ones die. Only the best ones survive and adapt. And it all starts again. Selection – mutation – selection. Action – reaction – action. Thousands of years, maybe hundreds of thousands of years have enabled humans to acquire extraordinary arms. Men have won nearly all the battles against Koch's bacillus. Only half of the people exposed to the bacillus are infected. And only 10 % of those infected develop the disease. If left untreated, half of the patients will die. A death toll of 2.5 deaths in every 100 people exposed. Macrophages and lymphocytes, antibodies and interferons, immunoglobulins and interleukins and many more elements of our immune system play the main role in winning the battle. Furthermore, since the middle of the last century, scientific progress, transmission of knowledge, the sharing of experiences, culture, have enabled us to develop very effective treatments. Treatments that can cure nearly all patients. The death toll could be reduced to 0 death in every 100 people exposed.

Nevertheless, tuberculosis remains a basic problem of public health. Individual victories of men against the bacillus do not result in the end of war. Human armies win battles and lose war. The survival of the bacillus seems guaranteed and the survival strategies used by the mycobacterial armies contribute to keep them in the field of battle for more time. What is failing? The strategy of human armies. We have not been able to fight against poverty and inequality or to control immunosuppressive diseases such as Aids, smoking, etc... Nor have we been capable to ensure

access to diagnosis and treatment to all patients. We have not even been able to make sure that those who have access to treatment complete it appropriately, with accurate drugs and during appropriate time.

The main strategy of TB prevention and control is early diagnosis of people and their cure. In most people with TB, recovery occurs after six months of treatment with at least four drugs for the first two months, and at least two during the following four months. If treatments are bad, irregular or erratic, or with less than four drugs, then forms of resistant tubercles bacillus can be selected. These resistant strains can spread from one person to another and if these people become ill then they will be infected with drug-resistant TB. As a consequence, they will not respond to standard treatments and will require less effective treatments which have more side effects. Some years ago, the WHO informed that resistant strains to the two major anti-TB drugs: isoniazid and rifampicin were more frequently detected. This form of TB was then called, and is still called today, multi-drug-resistant tuberculosis (MDR-TB). This form of TB requires longer treatments and a higher number of drugs, but resulting in a lower rate of cures and a higher rate of adverse effects. The evidence of its spread sounded the alarms in the WHO. As if that weren't enough, the WHO and the health authorities have warned us against a new danger: extensively drug-resistant tuberculosis (XDR-TB). That is TB that has developed resistance to isoniazid and rifampicin in addition to two more second-line drugs: any of the member of the fluoroquinolone family and one of the three injectable drugs excluding streptomycin. That is to say, a strain that is resistant to at least four drugs, two first-line as well as two second-line drugs. To the problems of MDR-TB, we have to add not having the whole arsenal of second-line drugs, and also having to manage with much less effective and more toxic drugs. The outcome is clear: less cures and more adverse effects.

In short, the enemy takes advantage of these failures of strategy to evade pressure as well as to keep the war going without any end in sight. Thus there are new bacilli, some are drug resistant, others are multi-drug resistant and finally we have had for some time now the extensively drug-resistant.

Tuberculosis is a preventable disease. There are highly effective tools which can control and even eradicate TB from the planet in a reasonable time; however, nearly nine million people become ill every year in the world. Tuberculosis is a diagnosable disease that can be treated. No one should die of tuberculosis and yet it causes more than a million and a half deaths every year in the world.

Poor people get ill more and those who get ill become even poorer and so creating a vicious circle. Fighting against tuberculosis is also fighting against poverty.

What we have said so far is especially relevant to prisons, to the prison population. The highest rates of tuberculosis incidence ever published refer to prison population. It is not unusual that rates are up to 100 times higher than those of general population of the corresponding country. Prevalence of tuberculosis of 4,560 and 5,995 cases per 100,000 inmates have been published in Russia and Georgia. In the WHO European region it is estimated that prison population has 84 times more TB than general population with a prevalence of 393 cases per 100,000 inmates. In Latin America and the Caribbean TB incidences in prisons is estimated to be 22 times higher than in general population with approximately 1,000 cases per 100,000 inmates. In Africa, studies published on TB in prison population also show very high rates, about 3,500 and 5,800 cases per 100,000 inmates. In Asian countries, very diverse rates have been published, ranging from an incidence of 259 cases per 100,000 inmates in Taiwan to a prevalence of 3,900 cases per 100,000 inmates in Pakistan. MDR-TB and XDR-TB in prison population is already a major public health problem in countries where anti-TB drugs, although they are available to prison population, are not well managed. Thus in Russia and other former Soviet Union republics, MDR-TB was observed in between 12 and 55 % of patients who had been previously treated. A study in Thailand showed that 19 % of TB cases corresponded to MDR-TB.

The high prevalence of the disease verifies the absence of effective programs of TB prevention and control in prisons. And this lack of prevention in prisons has its repercussions onto the whole society's health. Koch's bacillus does not know of bars or barbed wire that can hold them behind the prison wall.

The best way to fight against MDR-TB and XDR-TB is to invest in the control of non-resistant tuberculosis.

Diagnosing patients early, *thinking of Tuberculosis*, and curing patients remain the main strategies in order to prevent the spread of tuberculosis bacilli and eventually win the war of a hundred thousand year-old or more.

And in this war, Prison Health must play the starring role.

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