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Tuberculosis and the myths surrounding it

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Tuberculosis, abbreviated as TB, is a treacherous disease. The disease primarily affects lungs, but can also affect other parts of the body. TB is caused by bacteria from the *Mycobacterium tuberculosis* complex. The infection is mostly hidden and latent, but about ten percent of people develop symptoms of the disease, which, if left untreated, results in death in about fifty percent of cases [1]. Treatment is difficult because of the frequent resistance of the bacterium to antibiotics [2-4]. For this reason, any misinformation, misconceptions and myths surrounding tuberculosis are very harmful.

Misinformation and myths stigmatize individuals with TB and lead to their isolation [5]. Misinformation is then variously oriented to create fear and tension around current crises. An example is the disinformation about the spread of tuberculosis in the Olomouc region related to the training of Ukrainian soldiers in Libava. The misinformation consisted of a fraudulent call to undergo TB testing “in connection with the extremely unfavorable epidemiological situation regarding tuberculosis in the Olomouc Region” [6]. The false information also appeared on the Facebook profile of Senator Jana Zwyrtkova. Also fake was a document sent to email inboxes mimicking the anti-epidemic measures issued by the Chief Hygienist, stating that random checks of schools would be carried out to check for TB and threatening sanctions. This "document" also had some connection with the training of Ukrainian soldiers in Libava [7].

While the misinformation was focused on social (political, security) issues, the misinformation and myths are related to health issues and can directly threaten a person's health. So which myths about tuberculosis are the most common?

Myth 1: Everyone who has been diagnosed with TB is infectious. This is not true. Tuberculosis can only be transmitted from person to person if a person develops symptoms, that is, if he or she has so-called open TB. A person with a latent infection cannot transmit TB. Likewise, a person who has a form of infection other than pulmonary, i.e. in the spine or kidneys, is unlikely to infect another person [8]. In general, even people with TB stop being infectious approximately 2-3 weeks after starting treatment. [9].

Myth 2: Tuberculosis is genetic. This is a misconception. The idea that TB is transmitted from parents to children stems from the fact that the disease often occurs in people living in a shared household. However, this is because the bacteria causing TB, from the *Mycobacterium tuberculosis* complex, are spread from one individual to another through droplets secreted during coughing or sneezing, and people in the household live in relatively close proximity. It is then up to the susceptibility of the household members, or the state of their natural immunity, whether or not they become ill. For the sake of completeness, it should be noted that there are genes that control the level of natural immunity to infection, but they cannot be identified as TB disease-causing genes [10, 11].

Myth 3: There is no cure for TB. This myth is not true either. It is true that TB is very difficult to treat, takes a long time to cure, and requires a combination of several antibiotics in many cases. However, there are a number of drugs available for TB today, the most commonly used being Isoniazid (Hyzyd),

Rifampin (Rifadin®), Ethambutol (Myambutol®), Pyrazinamide (Zinamide®) or Rifapentine (Priftin®) [12]. However, there are a number of other drugs that can be used for specific cases of TB [13].

Myth 4: TB occurs only in underdeveloped countries. If the Czech Republic is not considered a backward country, this is also a myth. In the Czech Republic, 383 TB cases were reported in 2022, occurring in all regions of the Czech Republic, with the highest number of cases in Prague (97 cases) and the lowest number of cases in the Liberec region (7 cases) [14]. TB can affect people anywhere in the world.

Myth 5: Tuberculosis is always fatal. This is again a myth. It can only be true if TB is untreated. In 2022, only 17 patients died of TB in the Czech Republic out of a total of 383 reported cases [15].

Tuberculosis is indeed a health problem. The causative agent of tuberculosis, the bacterium of the *Mycobacterium tuberculosis* complex, most likely evolved in the Horn of Africa, in what is now Ethiopia and Somalia, some 40,000 to 70,000 years ago and co-evolved with human evolution through a process known as coevolution [17, 18]. It has thus accompanied humans for thousands of years. Today, however, TB is treatable, and if we adhere to valid information and avoid misinformation and entrenched myths, TB will not be a stressful situation and stigma for those infected.

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