

Editorial

RESP

From control of tuberculosis to control of infection: WHO recommendations for low-prevalence countries

One fourth of the world's population is infected by the bacillus *Mycobacterium tuberculosis*¹. Vulnerable persons living under certain social conditions, such as the homeless or injection drug users (IDU), are at greater risk of infection, as are newly arrived immigrants from countries with a high prevalence of tuberculosis (TB). Furthermore, from 5% to 10% of the infected persons who are left untreated shall develop the disease over their lifetime, especially in the first five years after infection². At the same time, persons who have a compromised immune system, such as those infected by the human immunodeficiency virus (HIV) are the ones most at risk of developing the disease.

The epidemiology of tuberculosis in Catalonia clearly shows a drop in prevalence in recent years, with 13.2 cases per 100,000 inhabitants in 2017. However, it should be pointed out that the level of prevalence amongst the foreign population is four times higher than that observed in the local population. In 2017, there were 35.8 and 8.4 cases per 100,000 inhabitants respectively³. The same situation can be seen in Spain as a whole, with approximately 30% of cases born in foreign countries⁴. As regards the European Region of the World Health Organisation (WHO), it should be pointed out that, although the region has one of the lowest levels of prevalence of the disease, it also has the highest number of cases of multidrug-resistant tuberculosis⁵.

The most common risk factors for tuberculosis in Catalonia in 2017 were smoking (29.8%), social vulnerability (20.1%) and alcoholism (11%). 5.3% of the cases of tuberculosis in 2017 were found to have a co-infection with HIV³.

STRATEGY OF THE WORLD HEALTH ORGANISATION FOR ELIMINATING TUBERCULOSIS

In May 2014, the WHO adopted the *Global End TB* strategy to intensify efforts geared towards eliminating tuberculosis worldwide, with the objective of reducing the prevalence of the disease by 90% in 2035⁶. The strategy in the European Region and countries with a low prevalence is directed towards reducing prevalence by 20% before 2020, by using the 2016-2020 *TB Action Plan*^{7,8}. Part of the framework of this strategy for countries with fewer than ten cases per 100,000 inhabitants includes systematic screening of latent tuberculosis infection (LTBI) in specific high-risk groups that are regarded as a reservoir of the disease, whenever the local epidemiology and resources so permit, although the priority continues to be detecting cases of tuberculosis^{9,10}. In particular, the application of preventive interventions to immigrants and their treatment prior to, during and after migration is possible if there is universal access to healthcare, and it should be noted that the long-term objective of eliminating tuberculosis can only be achieved if global and socio-economic inequalities in health are drastically reduced¹¹.

The recommendations for screening are accompanied by the premise that it should be carried out with the intention to provide treatment in the event of a positive result. The development of LTBI in tuberculosis can be prevented with different preventive treatments, the efficacy of which varies between 60 and 90%¹². The benefits obtained from treatment outweigh the possible adverse effects in groups where the risk of the disease progressing is higher. With these considerations in mind, the WHO has drawn up a set of evidence-based directives to manage the screening strategy for different high-risk groups in low-prevalence countries¹³.

THE CONTROL OF TUBERCULOSIS AND LATENT TUBERCULOSIS INFECTION IN PRISONS

It is estimated that the prevalence of LTBI amongst inmates of Spanish prisons is between 40% and 50%^{14,15}, and it is a well-known fact that the prevalence in prisons is higher than in the general population, independently of the economic status and the disease burden in each country¹⁶. In these studies, the presence of LTBI has been associated with being over 40 years of age, spending more than five years in prison and coming from countries in Eastern Europe, Sub-Saharan Africa and Latin America. A cross-sectional study carried out in a Madrid prison in 2016 found a 54.6% prevalence of LTBI and also discovered that infection by the hepatitis C virus acted as a predictor for presenting LTBI¹⁷.

The persons that enter prison often present one or more of the social and/or medical conditions considered to represent vulnerability to LTBI and progression to tuberculosis, such as being a recent immigrant, a homeless person, an IDU or infected by HIV^{18,19}. In the case of the prisons in Catalonia, 93.2% of the inmates in 2017 were men, of whom 43.2% were foreigners, most of whom came from low-income countries²⁰. Likewise, the fact of being in an enclosed institution like a prison can favour transmission of the infection if there are smear-positive inmates present^{21,22}. Such conditions have led to prison inmates being regarded by the WHO as a population at risk of infection and progression to tuberculosis, and so they recommend that systematic LTBI screening should be applied to this group^{18,23}.

This state of affairs means that programmes designed to control tuberculosis in prisons are regarded as a vital strategy for infection control, the main objectives of which are early detection of cases of tuberculosis in order to prevent transmission and ensure that the disease is cured using directly observed therapy (DOT). This approach to dispensing treatment is essential in public health terms for controlling the disease, the treatment of which takes months, since it provides higher levels of adherence and success of the therapy in populations that are hard to reach and socially vulnerable. Furthermore, internment in prison offers a unique opportunity to carry out DOT with high probabilities of success. In Catalonia, the average time spent in prison was 520.8

days in 2017. Convicted prisoners spent an average of 699.1 days while others held in preventive custody spent an average of 135.8²⁰. Therefore, the period that convicted inmates are held in prison favours the use of therapy without problems of adherence if they present tuberculosis.

Implementation of the *TB Control Programmes* commenced in Catalonia in 1985, and successfully fulfilled its objectives: LTBI screening has become a habitual practice when someone enters prison, and treatment of tuberculosis patients is carried out on 100% of cases using DOT. Such practices, along with a reduction in the prevalence of tuberculosis amongst the general population, has led to a lower number of diagnoses in prison: from 1996 to 2016, a reduction of 91.8% was observed, and in 2017 only 8 cases were reported in Catalanian prisons²⁰. Therefore, the prison system enables strategies recommended by the WHO and the European Centre of Disease Prevention and Control (ECDC) to be effectively managed, in order to detect and treat populations at risk of LTBI and its progression to a full-blown disease, thereby contributing to reducing the infection reservoir.

The control of tuberculosis and LTBI in prisons is achieved through political commitment, partnership and financing sustained over the long term²⁴. Continuing with and encouraging screening when entering prisons is regarded as a fundamental strategy for preventing the transmission of tuberculosis from the community to the prison environment, and for detecting and preventing LTBI, without forgetting the tremendous importance of studying contacts and the suitable isolation of the person affected every time a case of active tuberculosis is detected inside prison. Neither should the importance of screening prison personnel be forgotten, or the benefits gained from ruling out tuberculosis or LTBI in inmates before they are released, as a measure to prevent transmission from prison to the community. As regards the research on the control of tuberculosis in prisons, it is important to remember the importance of knowing about the prevalence of the disease, if it is drug-resistant, resistant or multi-resistant, and the prevalence of tuberculosis/HIV co-infection²⁴.

All these strategies can make a major contribution to controlling tuberculosis not just in the prison setting, but also in the general population in low-prevalence countries, acting on each of the disease reservoir groups. That is why work is being carried

out on a *Guide to Latent Tuberculosis Infection*, using a public health perspective, that includes all the above mentioned points, and which has the final objective of helping to control both tuberculosis infection and the disease itself.

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