



PERSPECTIVE

An opposing view on including high school students in a latent tuberculosis infection control program in Korea

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The Korea Centers for Diseases Control and Prevention (KCDC) has announced a control program against latent *Mycobacterium tuberculosis* infection (LTBI), for a “TB-safe country” this year with the goal of a “TB-free Korea” by 2025. The program includes high school students as one target group; however, some school health teachers and parents have expressed their opposition to this. The 2015 World Health Organization guidelines do not recommend inclusion of asymptomatic high school students in LTBI control programs. Based on this guideline, the KCDC should consider excluding this population from the program.

KEY WORDS: Latent tuberculosis, Disease management, Antitubercular agents, Practice guidelines as topic, Risk assessment

INTRODUCTION

To reduce the incidence of tuberculosis (TB) in South Korea (hereafter Korea) to that of developed countries, and to establish Korea as a TB-free nation by 2025, the Korea Centers for Disease Control and Prevention (KCDC) has suggested implementation of a TB-related program in 2017 [1]. This program would include 340,000 people undergoing medical examination for conscription to military service; 380,000 people working in group environments such as medical institutions and daycare facilities; 10,000 out-of-school adolescents; 470,000 first-year (10th grade) high school students and high school faculty members nationwide; 40,000 correctional inmates; and 640,000 candidates for life transition health screening at age 40. These groups would be screened for latent *Mycobacterium tuberculosis* infection (LTBI) and prophylactic anti-TB drugs would be administered to those who test positive. This can be viewed as a transition to a new paradigm of TB prevention from

the current position of responding to incidences of active TB [2].

In response to announcement of this program, on March 20, 2017 the Health Education Forum Corporation (HEFC), a corporation aggregate, announced its objection to inclusion of first-year high school students as participants in the program's LTBI screening [3]. This suggests growing confusion and conflict among authorities involved in national health programs, health teachers involved in on-site school health programs, and parents of first-year high school students. The author of this paper considers that the main cause of such conflict is not the implementation of LTBI screening itself but the inclusion of first-year high school students in the program. Accordingly, the objectives of this paper are to examine best-practice guidelines for LTBI screening and determine the need for reassessing the selection criteria for LTBI screening among Koreans.

MAIN TEXT

The best evidence for LTBI screening is from studies that have been recently published, conducted by credible entities, and have applied highly persuasive scientific methods [4]. The evidence meeting these conditions follow the guidelines proposed by the World Health Organization (WHO) in 2015, which conducted systematic reviews of 14 topics related to LTBI care [5].

Among these guidelines, the following three have been proposed for LTBI screening (Table 1). First, individuals who require mandatory LTBI screening include those infected with human immunodeficiency virus, adults and children who encounter active pul-

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Table 1. Target participants in screening and treatment for latent tuberculosis infection

Target participants	
Should be performed	People living with HIV Adults and children who contact cases with pulmonary TB People initiating anti-TNF-alpha treatment People receiving dialysis People preparing for organ or hematological transplantation People with silicosis
Should be considered	Correctional inmates Healthcare workers Immigrants from high TB burden countries Homeless people Illicit drug users
Not recommended	People with diabetes People with harmful alcohol use Tobacco smokers Underweight people unless already included in the above recommendations

Adapted from Getahun et al. *Eur Respir J* 2015;46:1563-1576 [5].

HIV, human immunodeficiency virus; TB, tuberculosis; TNF, tumor necrosis factor.

monary TB cases, people taking anti-tumor necrosis factor-alpha agents, patients receiving dialysis, those preparing for organ or hematological transplantation, and patients with silicosis. Second, individuals who should be considered for LTBI screening include prisoners, healthcare workers, immigrants from high TB burden countries; homeless people; and illicit drug users. Third, people who are not recommended for LTBI screening include people with diabetes, those with harmful alcohol use, tobacco smokers, and people who are underweight.

When the aforementioned WHO guidelines are applied to the nationwide program proposed by the KCDC, first-year high school students, out-of-school adolescents, and candidates for health screening at the age 40 years do not belong to any of the three groups presented in Table 1. Based on this, it is necessary to seriously consider the concerns raised by the HEFC about including first-year high school students as LTBI screening subjects and those of the students' parents. In particular, implementing the program among students whose parents give prior consent for LTBI screening would predicate that the parents and students themselves receive accurate program information, which would be difficult to provide by a simple announcement alone [6].

Based on WHO guidelines, it is reasonable to include correctional inmates in the program, considering that they cohabitate and eat together in the same facility. Inclusion of candidates for military conscription also has merit, based on the situation in Korea. Moreover, the WHO guidelines also include healthcare workers, who often come in contact with immunologically compromised patients. Inclusion of Korean primary, secondary, and high school faculty, who spend much time with children and adolescents who are vulnerable to TB infection, may be convincing.

The claims made by the HEFC [3] include a statement regarding "anti-TB drugs with high toxicity and adverse event rates," which raises serious concerns about adverse effects. However, WHO guidelines [5] indicate that while there may be some cases of elevated

liver enzyme levels with no clinical symptoms, these are mostly minor cases that rarely occur. However, those with a prior history of liver disease, habitual alcohol use, and/or those aged 35 years or older are recommended to undergo liver function tests prior to taking any anti-TB drugs, to assess liver function changes after taking such drugs. That being the case, participants in the program who should be more concerned about adverse events are candidates for life transition health screening at age 40 rather than first-year high school students.

CONCLUSIONS AND RECOMMENDATIONS

According to WHO guidelines, Koreans who should be performed in the LTBI screening program are those who are already being screened and treated at medical institutions according to clinical practice guidelines. The main targets of the KCDC program pursued now fall into the category of individuals who should be considered for LTBI care. Therefore, it is believed that medical scientific evidence is lacking for including first-year high school students, out-of-school adolescents, and candidates for life transition health screening at age 40 in the program. Instead, an appropriate evidence-based healthcare policy would be to screen all students in the same grade for LTBI according to WHO guidelines only when a classmate has been diagnosed with active TB and to prescribe drugs only to those who test positive for LTBI.

Moreover, among healthcare workers and correctional inmates who should be considered for LTBI screening on WHO guidelines, follow-up investigation is recommended for those who test positive but refuse medication, to establish the natural history of LTBI among Koreans. In addition, conducting a cost-effectiveness study on the LTBI screening program by investigating participants who did take the prescribed medication is recommended. Furthermore, based on the situation in Korea, it is urgent to conduct epidemiological studies on the need for LTBI screening among candidates for conscrip-



tion to military service and school faculty nationwide, even though these populations are not included in the WHO guidelines.

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CONFLICT OF INTEREST

The author has no conflicts of interest to declare for this study.

SUPPLEMENTARY MATERIAL

Supplementary material (Korean version) is available at <http://www.e-epih.org/>.

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