

Quickness of HIV and Tuberculosis Diagnostic Procedures in Prison of Tehran, Iran

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Abstract: Background: Quickness of diagnosis and getting results in prisons is lower than other settings. The present study aimed to assess the quickness of HIV and Tuberculosis diagnostic process in the Great Tehran Prison.

Materials and Methods: The present study evaluated the quickness of HIV diagnostic testing (ELISA, Western Blot and CD4 count) in the Great Tehran Prison over the period of October 2013 to May 2014. Also, all suspected tuberculosis (TB) patients in the prison were examined for the occurrence of active TB through collecting 35 chest X-rays and 215 sputum specimens for acid-fast bacillus (AFB) testing at the health center laboratory.

Results: The average interval between when test requests were made by a physician and when HIV ELISA/Western Blot was obtained was relatively long time. On average, the interval between a physician's requests for CD4 count to assess the results was eight days. The average time interval between test requests by a physician to deliver sputum samples to the laboratory was four days. However, the average time interval between a physician's requests for sputum samples to assess the results was 16 days.

Conclusion: Due to the significance of positive and negative results for making decision on diagnosis, initiation and follow up of treatment procedure, the time intervals should become shorter.

Keywords: CD4 count, Chest X ray, ELISA, Quickness, Sputum, Western Blot.

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INTRODUCTION

HIV has been recognized as a key health problem in prisons around the world. Specific features of the prisons increase the risk of HIV transmission [1].

Obviously, the diagnosis of HIV-infected people provides essential, albeit inadequate, means to achieve a complete access to health care, treatment and support services, as well as for prevention of

further transmission in the prisons [2]. The diagnostic process in the prison is a multifaceted interaction between technical procedures and individual skills under difficult conditions [3].

HIV testing is one of the main strategies to prevent HIV infection especially in the prisons. Despite the availability of HIV testing and also the important personal benefits of timely HIV services, a considerable proportion of individuals remain unaware about their HIV status in the prisons [4].

The inadequate implementation of HIV testing procedures and strategies indicates an obstacle for

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the testing. Understanding barriers to HIV testing from the perspectives of individuals and test providers who are working in the prisons is a critical factor in the design of a well-organized HIV testing program [5].

The barriers to HIV testing specially in the prison can be divided into three groups; 1) Individual: poor awareness and knowledge about HIV and advantages of treatment, lack of information about access to HIV testing, and concerns regarding privacy and stigma; 2) Healthcare provider: lack of knowledge and training to carry out HIV testing and counseling, low awareness about HIV outcomes and impact of inadequate risk evaluation, and discomfort with facing HIV infection issues and patients' sexual history. According to research, health care providers have mostly noted that anxiety around HIV is a significant barrier to offering HIV testing [6,7]; and 3) Institutional barriers: lack or inadequate implementation of HIV testing policies and programs, poor resources, the existence of official and financial obstacles for accessing health care and treatment services, for example, among migrants and injection drug users. A study showed that poor quality of funding, staff and office space, as well as the lack of staff training were identified as key barriers to offering on-site HIV testing and counseling [8].

The barriers to HIV testing impose a large negative impact on successful prevention efforts in the prisons. All over the world, prisons assist to increase the risk of HIV transmission due to their structural and personal features. Also, the quickness of diagnosis and getting results here is lower than other settings. A rapid method in obtaining satisfactory results as to consider standard precautions is a key aspect, leading to decreased transmission rate in the prisons [5].

Tuberculosis (TB) is the second most lethal cause after HIV infection. Eighty percent of all TB patients live in 22 countries, mainly in the third-world regions [9, 10]. The prevalence of TB in prisons is considered as a main health problem. The socio-demographic features of prisoners such as poor socio-economic status, high migration rate, drug user, and homeless, as well as prison environment and situation including overcrowding and inadequate ventilation result in increased risk of contracting TB disease among prisoners [11, 12].

The rate of TB prevalence in prisons is up to 83.6 times more than the community [13].

The application of diagnostic tools for TB infection is associated with prison facilities, based on restrictions of health care, and prevalence of TB, HIV, and TB/HIV co-infection in prisons and among general population. The screening measures to detect TB disease can be adapted to local circumstances that may vary significantly across regions. Among further limitations on useful screening practices in prison facility include limited number of health personnel, overcrowding in prison population, and poor symptom check-ups [14]. There is no or little laboratory in prisons leading to delayed referrals to health care services outside the prison. Consequently, these factors resulting in higher counts of TB in prisons are expected contribute to the transmission to broader populations [15].

There are several procedures to diagnose TB infection. According to the present guidelines provided by the World Health Organization (WHO) and the International Union Against Tuberculosis and Lung Disease, the fundamental step in planning the survey design for patients suspected to have pulmonary TB should be the serial examination of at least three sputum specimen for acid-fast bacilli (AFB) [16, 17].

The present study aimed to assess the quickness of HIV and Tuberculosis diagnostic process in the Great Tehran Prison.

MATERIALS AND METHODS

The present study evaluated the quickness of HIV diagnostic testing (ELISA, Western Blot and CD4 count) in the Great Tehran Prison over the period of October 2013 to May 2014. Also, all suspected tuberculosis (TB) patients in the prison were examined for the occurrence of active TB through collecting 35 chest X-rays and 215 sputum specimens for acid-fast bacillus (AFB) testing at the health center laboratory.

RESULTS

Table 1 shows the time period from the date of sample collection (ELISA, Western Blot and CD4 count) to laboratory receipt (October 2013 to May 2014) for 56 HIV positive patients in the prison. Furthermore, this time interval reflects the speed

Table 1. The period between delivery of samples to laboratory until receiving the results of ELISA, Western Blot and CD4 count test.

Central indicators (Based on day)	Mean (SD)	Median	Minimum	Maximum
ELIZA	20.9 (15.3)	11	7	60
Western Blot	32.9 (18.3)	36	0	65
CD4 count	7.8 (10.2)	0	0	46

Table 2. Time intervals related to sputum samples and chest X rays in the Great Tehran Prison, 2013-2014.

Daily Intervals	Mean	Standard Deviation	Minimum	Maximum
Interval from requesting for sputum sampling to deliver container to the patients	2.6	3.7	0	21
Interval from delivering containers to the patients to receive sputum samples	1.3	1.0	0	6
Interval from receiving sputum samples to send samples to the laboratory	0.2	0.6	0	4
Interval from inform to TB communicator to receiving the written answers	13.2	10.9	1	71
Interval from inform to TB communicator to doctor observation	16.1	11.7	6	71
Interval from sending samples to laboratory to receive the results	13.4	7.0	0	32
Interval from receiving the written answer to doctor observation	3.7	7.2	0	24
Interval from inform to radiologist to taking chest x ray	1.4	3.6	0	17
Interval from taking chest x ray to doctor observation	0.3	1.3	0	7
Interval from inform to radiologist to doctor observation	1.8	3.9	0	17

of HIV diagnostic services. Also, in order to assess all suspected TB patients for active TB in the prison, 35 chest X-rays and 215 sputum specimens for acid fast tests were send.

The quickness (expedition) of the TB diagnostic procedure reported as intervals between requests for sputum specimens and chest X-rays for clinical observations is presented in Table 2.

DISCUSSION

The average interval between when test requests were made by a physician and when HIV ELIZA/Western Blot was obtained was relatively long time and this requires an improvement. On average, the interval between a physician's requests for CD4 count to assess the results was eight days, though it seems acceptable due to certain situations of the prison.

The average time interval between test requests by a physician to deliver sputum samples to the laboratory was four days, though this seems ac-

ceptable due to certain situations of the prison. However, the average time interval between a physician's requests for sputum samples to assess the results was 16 days, requiring improvement. Although all the positive sputum AFB smears were reported to the physician using telephone at the same day, owing to the importance of negative results in making decision on continuation of treatment and other clinical therapies, this interval should become shorter.

Owing to the significant role that positive and negative results play in making decisions on diagnosis and initiation of treatment, this interval should become shorter. Most importantly, due to short duration of imprisonment, the prisoners may be released before receiving the results.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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