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Research Article

Similarities in Measures to Prevent the Spread of Covid-19 and Tuberculosis

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1. Introduction

Lessons learned from the COVID-19 pandemic indicate that, overall, public health systems were not prepared to deal with a new viral pathogen that spread rapidly around the world, as containment measures were unclear and inadequately implemented during the most critical period [1, 2]. More than two years after the emergence of the SARS-CoV-2 virus, it is clear that collaboration in information sharing between governments and health care facilities, as well as clear and timely communication with the public, are critical to slowing the spread of infection and the emergence of a pandemic [3-6]. Part of post-pandemic health system recovery requires restructuring public health systems to be better prepared to deal with outbreaks of new diseases that have overwhelmed traditional hospital systems and significantly reduced the quality and capacity of patient care. However, it remains unclear whether health measures in any one country have adapted to the next outbreak [7, 8].

1.1. Objective

Improving the provision of medical and preventive services to the population in health care facilities and in the community in probable emergency situations due to possible outbreaks of respiratory infectious diseases using the experience of the anti-tuberculosis service (ATS).

2. Material and Methods

This paper examines publications from different countries on lessons learned after the COVID-19 pandemic, statistical data on the incidence of COVID-19 and tuberculosis (TB), the main provisions recommended for a partial reorganization of the healthcare system to prepare it for outbreaks of respiratory infections. The norms and rules of anti-tuberculosis infection control were used to develop preventive measures against the spread of airborne infections nosocomially and in the community.

3. Results and Discussion

The analysis showed that traditionally used measures, understood as a “sanitary and anti-epidemic regime”, focus the attention of health workers mainly on the disinfection of surfaces and objects and the disposal of medical waste, which is of great importance in terms of preventing common contact infections. However, it is impossible to achieve a radical reduction in the risk of airborne infection transmission by using only these traditional measures.

To prevent nosocomial transmission of respiratory infections, as well as the spread of these infections in society, it is recommended to use the PTS experience as an example. For example, the PTS stipulates that the coordination of infection control activities in a healthcare facility is ensured by the head of the organization, or a separate job title is provided for - the deputy director for infection control. For the effective organization of the infection control system, each healthcare facility establishes an infection control commission, acting in accordance with the Model Regulation. Each healthcare facility develops a Work Plan for the organization and implementation of infection control, the implementation of which is monitored using specially developed checklists and indicators for monitoring and evaluating infection control. The infection control plan contains specific, realistically feasible measures indicating the deadlines for implementation and the persons responsible. The Plan provides for the training of medical personnel on infection control issues.

Organization of measures to prevent cases of occupational TB disease, in order to promptly identify persons suspected of having TB, active case detection is carried out by responsible persons; the nature and place of work of employees is monitored; strict compliance with infection control measures by patients; checks the operating mode of the air ventilation system and ultraviolet bactericidal emitters; the frequency of air exchange in high-risk areas and the concentration of infectious aerosol particles in the air of premises using infection control devices; use of personal protective equipment; fit test and other measures. The infection control specialist participates in clinical rounds at least twice a week in structural units with a high risk of

TB development, analyzes all indicators of infection control monitoring and assessment. In the block of measures for organizing the ventilation system, ultraviolet irradiators are simultaneously installed, especially in areas with a high risk of infection with mycobacteria TB. High-risk zones include wards in departments for patients excreting bacteria, corridors in departments for patients with multidrug-resistant TB, sputum collection points, endoscopy rooms, bacteriological laboratories, etc. It should be emphasized separately that bacteriological laboratories should have biological protection boxes equipped with local exhaust ventilation with built-in HEPA filters.

In order to prevent the spread of tuberculosis infection in society, there are also norms and rules, the effectiveness of which has also been proven by various scientific studies. They mainly come down to maintaining social distance, eliminating crowds in public places, limiting excessive migration and holding various mass events, strictly using personal protective equipment, etc.

The following are routinely observed in the PTS: "the ventilation regime in the premises, including the use of stationary or mobile air disinfection devices in quantities sufficient to treat all wards and corridors, taking into account the required frequency; creating conditions for staff, visitors and patients to comply with hand hygiene rules in medical organizations, providing for the provision of elbow-operated (non-wrist) faucets, contactless soap and skin antiseptic dispensers; provision of protective suits; compliance by staff, visitors and persons involved in patient care with the requirements of the mandatory mask regime and the rules for the use of medical respirators."

In addition to the above, the PTS has also developed and implemented innovative approaches based on various digital programs that allow them to be used in the context of restrictions associated with the COVID-19 pandemic:

Consulting the population on the procedure and addresses for the provision of anti-tuberculosis services using the One Impact mobile application. Since the introduction of this technology, several hundred cases of online consultations have been completed.

"Telemedicine consultations". All regional centers for the protection of the population from TB are connected to the main specialized institutions: The National Center for TB, Pulmonology and Thoracic Surgery and the Republican Center for the Protection of the Population from TB, which regularly consult doctors on the tactics of diagnosis and treatment of complex cases of TB. In addition, this platform is used for online information, methodological guidance and training of medical personnel, conducting seminars and trainings.

Screening of key population groups using digital X-ray machines with artificial intelligence installed in them. So far, there are 20 of them in PTS and work is currently underway to ensure that information from all of them is accumulated in one server.

"Video-controlled treatment at home" using various messengers. Currently, PTS has completed the development of the LIMS (Laboratory Information Management System) platform, which allows managing the entire chain of patient laboratory testing, starting with the stage of blood collection, its delivery to the laboratory, conducting research and obtaining results. The LIMS platform allows minimizing losses, standardizing, systematizing and shortening the laboratory research process.

The positive aspects of individual elements of digital innovations during the COVID-19 pandemic in the management of the anti-tuberculosis program have been described by other authors [9-23].

4. Conclusion

In general, it can be concluded that the PTS can be a coordinating link for preparing the healthcare system for various possible outbreaks of respiratory infections. It should be noted that in none of the publications available to us did we find information on the similarity of preventive approaches to nosocomial transmission of infection in COVID-19 and TB; only the experience of providing medical services to TB patients during the COVID-19 period was indicated. To increase the effectiveness of preventive measures against the transmission of respiratory infections, it is necessary to carry out both functional and structural integration of the PTS and other involved institutions of the healthcare system.

References

1. World Health Organization. (2020). World Health Organization (WHO) Information Note Tuberculosis and COVID-19. Geneva: World Health Organization.
2. Amimo, F., Lambert, B., Magit, A. (2020). What does the COVID-19 pandemic mean for HIV, tuberculosis, and malaria control?. Tropical medicine and health, 48(1), 32.
3. Baughman, A. W., Hirschberg, R. E., Lucas, L. J., Suarez, E. D., Stockmann, D., et al. (2020). Pandemic care through collaboration: lessons from a COVID-19 field hospital. Journal of the American Medical Directors Association, 21(11), 1563-1567.
4. Edwards, A. M., Baric, R. S., Saphire, E. O., Ulmer, J. B. (2022). Stopping pandemics before they start: Lessons learned from SARS-CoV-2. Science, 375(6585), 1133-1139.
5. Benham, J. L., Lang, R., Kovacs Burns, K., MacKean, G., Léveillé, T., et al. (2021). Attitudes, current behaviours and barriers to public health measures that reduce COVID-19 transmission: A qualitative study to inform public health messaging. PloS one, 16(2), e0246941.
6. Prather, K. A., Wang, C. C., Schooley, R. T. (2020). Reducing transmission of SARS-CoV-2. Science, 368(6498), 1422-1424.
7. Bobokhojaev O, Radzhabzoda S, Pulatova S, Saidova

S. Experience of anti-tuberculosis service in case of possible outbreaks of respiratory infectious diseases, taking into account lessons learned during the COVID-19 pandemic. Buletinul Academiei de Stiinte a Moldovei: Stiinte Medical. 2023;3:55-8.
8. Bobokhojaev OI, Sattorov SS, Aliev SP, Avgonov ZT. Improving the epidemiological situation regarding the incidence of tuberculosis among workers of the anti-tuberculosis service of the Republic of Tajikistan. Healthcare in Tajikistan. 2019;2:99-101.
9. Baryshnikova, L. A., Kabaeva, M. N., Voekova, N. A., Loginova, N. A., Sirotko, I. I. (2021). Organization of activities of anti-tuberculosis medical institutions in the context of the COVID-19 pandemic. Tuberculosis and lung disease , 99 (3), 12-17.
10. Wang, Y., Feng, R., Xu, J., Hou, H., Feng, H., et al. (2021). An updated meta-analysis on the association between tuberculosis and COVID-19 severity and mortality. Journal of medical virology, 93(10), 5682.
11. Bogorodskaya EM, Nozdrevatykh IV, Borisov SE, Kotova EA. Routing of tuberculosis patients during the provision of inpatient medical care under conditions of high alert for COVID-19. Tuberculosis and social diseases. 2020;3:10-9.
12. Bogorodskaya EM. The impact of the COVID-19 pandemic on the organization of anti-tuberculosis care in Moscow. Tuberculosis and social diseases. 2020;4:3-9.
13. Ekaterincheva, O. L., Malkova, A. M., Karev, V. E., Kudryavtsev, I. V., Zinchenko, et al. (2021). Features of TB diagnosis in the background of COVID-19. Journal of Infectology, 13 (1), 117-123.
14. Kravchenko, A., Prokopiev, E., Yakovleva, L., Lukina, A., Luginova, E., et al. (2021). The introduction of new technologies for out-patient care for tuberculosis patients during the COVID-19 pandemic in the Republic of Sakha (Yakutia).
15. Krasnova MA, Isakova AI, Khalina SN, Safonova SG. Laboratory diagnosis of the new coronavirus infection COVID-19 at the International Scientific and Practical Center for the Fight against Tuberculosis. Tuberculosis and social diseases. 2020;4:52-7.
16. Kandrychyn, S. V. (2021). Detection of cases of tuberculosis and other infections during the COVID-19 pandemic. Tuberculosis and Lung Diseases , 99 (4), 66-68.
17. Nechaeva, O. B. (2021). The state and prospects of the anti-tuberculosis service in Russia during the COVID-19 period. Tuberculosis and lung diseases , 98 (12), 7-19.
18. Savintseva, E. V., Isaeva, P. V., Nizamova, G. F. (2022). Tuberculosis and COVID-19: medical and social aspects. Tuberculosis and lung diseases, 100 (3), 13-17.
19. Testov, V. V., Sterlikov, S. A., Vasilyeva, I. A., Sidorova, I. A., et al. (2020). Federal register of persons with tuberculosis as a tool for monitoring the impact of anti-epidemic measures caused by the COVID-19 pandemic on the tuberculosis care system. Tuberculosis and Lung Diseases, 98 (11), 6-11.
20. Marimuthu, Y., Nagappa, B., Sharma, N., Basu, S., Chopra, K. K. (2020). COVID-19 and tuberculosis: A mathematical model-based forecasting in Delhi, India. Indian Journal of Tuberculosis, 67(2), 177-181.
21. Crisan-Dabija, R., Grigorescu, C., Pavel, C. A., Artene, B., Popa, I. V., et al. (2020). Tuberculosis and COVID-19: lessons from the past viral outbreaks and possible future outcomes. Canadian respiratory journal, 2020(1), 1401053.
22. Iyengar, K. P., Jain, V. K. (2020). Tuberculosis and COVID-19 in India-double trouble. Indian J Tuberc, 67(4), 175-6.
23. Bobokhojaev OI, Pulatova SD, Mirzoaliev YuYu. Justification for the application of the experience of the anti-tuberculosis service for an adequate response during the COVID-19 pandemic. Avicenna Bulletin. 2024;26(2):314-21. https://doi.org/10.25005/2074-0581-2024-26-2-314-321.