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Hygienic and Epidemiological Aspects of the Organization for the Prevention of Infection of Patients, Employees and Visitors of TB Institutions

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ABSTRACT

Because of the continued tense situation on TB morbidity and high mortality problem of strengthening the prevention of this infection is important. In the last 7 years in Khabarovsk Krai antituberculosis institutions a program of the International Society of the Red Cross and WHO Crescent against TB has being realized. One of the conditions of this program is to create a set of epidemiological, clinical and hygienic measures aimed at preventing the spread of infectious disease, comprehensive infection control programs. Infection Control Program includes three levels of control: administrative, engineering and personal. The authors describe ways to implement infection control at all levels and express the view that the use of such approaches in general health care institutions, especially outpatient clinics.

Keywords: infection control, tuberculosis.

INTRODUCTION

Taking into the current epidemic situation on tuberculosis, which is characterized by the global spread of tuberculosis (TB) and extensively drug-resistant tuberculosis, reduce of the effectiveness of treatment and increased mortality from this infection, the problem of strengthening the prevention of the studied disease, including the sanitary-epidemic measures is rather topical [1,3].

In the Khabarovsk region on the basis of antitubercular establishments the TB program of the International Society of Red Cross and Red Crescent is realized more than 7 years. One of the conditions of implementation of this program is creation on the basis of epidemiological, clinical and hygienic measures, used in the international practice, aimed at preventing the spread of an infectious disease, a comprehensive infection control program. Experts who conducted inspection infection control programs, which allowed continuing the implementation of the international program on the territory of Khabarovsk region.

The epidemiology of tuberculosis in modern conditions includes the following:

- high incidence of tuberculosis;

- the spread of drug-resistant strains of Mycobacterium tuberculosis, including the appearance of pathogens with multidrug-resistant TB, extensively drug-resistant and resistant to disinfectants;
- the spread of HIV infection, which is accompanied by the increase in the number of persons much more prone to infection as the ILO and the reactivation of latent TB infection with fast and malignant development of active disease.
- nosocomial TB outbreaks. An increased incidence of TB medical personnel.

In connection with the peculiarities of the transmission of TB infection, it is essential that the nosocomial transmission of TB from patient to another patient, employee of a medical institution for the visitor. Recent studies performed in different countries have shown that health care workers treatment-and-prophylactic establishments, including anti-TB profile, contact with patients that release into the environment of the office, are at increased risk of infection and developing TB disease. In the absence of effective preventive measures significant factor in the spread of tuberculosis, including its drug-resistant forms, is the transmission of the pathogen not only in TB facilities, and in medical institutions of different profile, as well as in prisons, orphanages and residential living homeless [2,5].
TB prophylaxis includes many components that have different degrees of importance and require decisions at various levels. These include: early detection and proper treatment of TB, examination of contacts and timely detection among them are infected with M. tuberculosis, the correct tactics of isolation and placement of patients in a hospital, depending on their degree of epidemiological danger - bacillers, the presence of drug resistance, HIV status, and other, fulfilling all the requirements of sanitary and antiepidemic regime, including measures to reduce contamination of the air, the requirements of respiratory protection and personal hygiene etc.

The World Health Organization (WHO) in the prevention of nosocomial TB [2], speaking about the measures to control the spread of infection, divides them into three directions:

- administrative control - a set of administrative measures aimed at prevention of spread of infection from contaminated areas in clean areas and including including planning of premises, the organization of work, personnel training methods, providing the reduction of the risk of infection and other;
- engineering control of the engineering measures providing safety of the premises and the environment) - a complex of engineering (design and technical) measures aimed at reducing the concentration of infectious aerosols in the air - forced ventilation, the use of effective devices air disinfection by filtering, radiation and other;

- personal (individual) control activities in relation to risk groups - susceptible contingents of patients and medical workers and directed at individual protection of their respiratory system.

Measures of administrative control include:

- regular evaluations of the risk of spread of infection in different departments, different procedures and manipulations and for different categories of employees and visitors;
- development, approval, execution and regular adjustment plan for infection control the institution as a whole and/or its individual units;
- use of the protocols of detection, isolation, inspection and effective treatment of potentially infectious TB patients; division of streams of patients (sort) at admission and split their placement in the hospital (for the first time identified active forms of smear positive, MDR TB, the combination of TB with HIV and parenteral hepatitis, chronic forms of TB without-negative and etc);
- development of algorithms of safe working process; the implementation and monitoring of its implementation by staff, patients and visitors of the institution (for example, restrictions for patients of MBT + cases, observance of requirements of safety in laboratories to work with infectious hazardous material in biological safety cabinets etc);
- regular training of all the employees of health facilities and sanitary-educational work with the patients and the population;
- employee survey to detect infection and active TB disease.

Activities in the source of infection include the development Plan for the prevention of nosocomial TB infection in TB institutions, containing, including planning work in the premises, excluding the intersection of dangerous infectious patients (materials) with healthy or abacillary people (clean material), a survey of outpatient TB suspects, isolation, sorting and treatment TB patients, training of health workers, health education for patients and the population [2,5].

The plan of measures for infection control should describe in detail the whole complex of measures aimed at minimizing the risk of infection with tuberculosis medical and other personnel, as well as persons receiving medical care in TB hospitals. The plan should identify deadlines and benchmarks of efficiency and timelines of its key components (number of new cases among personnel, the number of patients who left the territory of the hospital, the number

of purchased respirators and surgical masks, the share of employees not using respirators in high-risk areas, etc).

The plan approved by the head of the institution where also appointed persons responsible for execution of the plan IR in General and, if necessary, its separate components.

Directions of the engineering control [2,5] include: ventilation and air conditioning; ultraviolet irradiation; stand-alone air cleaners of various types (UV filter - HEPA filters, electrostatic, electromagnetic, etc.).

Priority attention when carrying out control over the state of environmental give premises and areas with a high risk of tuberculosis transmission:

boxes and rooms for TB bacillary patients, especially with MDR; intensive care; rooms for induced sputum; bronhoscopic, dental, X-ray; operating rooms; section rooms; laboratory for tuberculosis control. The specific choice of measures for environmental control in each setting depends on the layout of the latter, local climatic conditions.

Despite the implementation of measures of administrative and engineering controls, in hospitals often occur areas of increased risk of M. tuberculosis infection with high concentrations in the air of infectious aerosols. In these cases, to prevent infection, measures of individual respiratory protection are applied - the third level of infection control. It is realized through the application by medical workers of certified respirators and patients - surgical masks. Personal respiratory protection should be used by health workers in the premises or conditions of high concentration of infectious aerosols or aerosol MDR or XDR infections, and bacillary patients – at the contact with healthy people or other, abacillary patients.

The application of the personal respiratory organs protection measures significantly reduces the risk of inhaling infected with Mycobacterium tuberculosis air. Effective use of this component of infection control is impossible without the necessary administrative support. Development and introduction of infection control in TB institutions proves the necessity of using similar approaches in General health care institutions, especially outpatient clinics.

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