

Epidemiological situation of tuberculosis in the Republic of Kazakhstan

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Abstract: We have presented the results of an assessment of an epidemiological situation of tuberculosis and identification of the main reasons for development of epidemic process in the territory of Kazakhstan. Retrospective population study of all cases of tuberculosis in the Republic of Kazakhstan during 1991-2013 has been conducted. It has been established that the epidemiological situation of tuberculosis in the republic remains tense. The quantity of hard to cure forms of tuberculosis with multi-drug resistance is growing, the percentage of violation of regimen of treatment in the supporting phase remains high. Long-term dynamics from 1991 to 2013 notes decrease in both morbidity and mortality rates. The reasons of incidence are bound to a large reservoir of tuberculosis infection, which supports the high level of contamination, development of destructive forms of pulmonary tuberculosis, high specific gravity of eliminators of bacilli and patients with forms of tuberculosis resistant to the main chemotherapeutic agents, low sanitary literacy of the population concerning tuberculosis. High contamination of children's and teenage population has been revealed.

Keywords: incidence, mortality, contamination, tuberculosis infection reservoir.

Introduction. Throughout all history of mankind tuberculosis has been its constant satellite, having a harmful impact on health of the population. According to the World Health Organization (WHO) every second one person in the world is infected with tuberculosis, each 4 seconds – gets sick and each 15 seconds dies of tuberculosis. A third of the population of the globe is infected with

the causative agent of tuberculosis. 8.4 million people worldwide annually come down with an open form of tuberculosis. Each diseased can infect 10 – 15 people within a year [1-3].

Tuberculosis is becoming both national and global problem of health care [4]. Such view is fair both concerning Kazakhstan and concerning many countries of the world. Tuberculosis falls into the group of socially significant diseases and is an important medical and social problem, causing considerable material loss due to incapacitation and premature death of the most productive population [2,5-8].

The epidemiological situation of tuberculosis in Kazakhstan remains tense, despite stabilization of morbidity rate and prevalence index and the outlined tendency to their improvement in recent years. In tuberculosis morbidity Kazakhstan holds the leading position among the countries of the Commonwealth of Independent States (CIS) and Europe [5,9-11].

The goal of research was the assessment of an epidemiological situation of tuberculosis and identification of the main reasons for development of epidemic process in the territory of Kazakhstan.

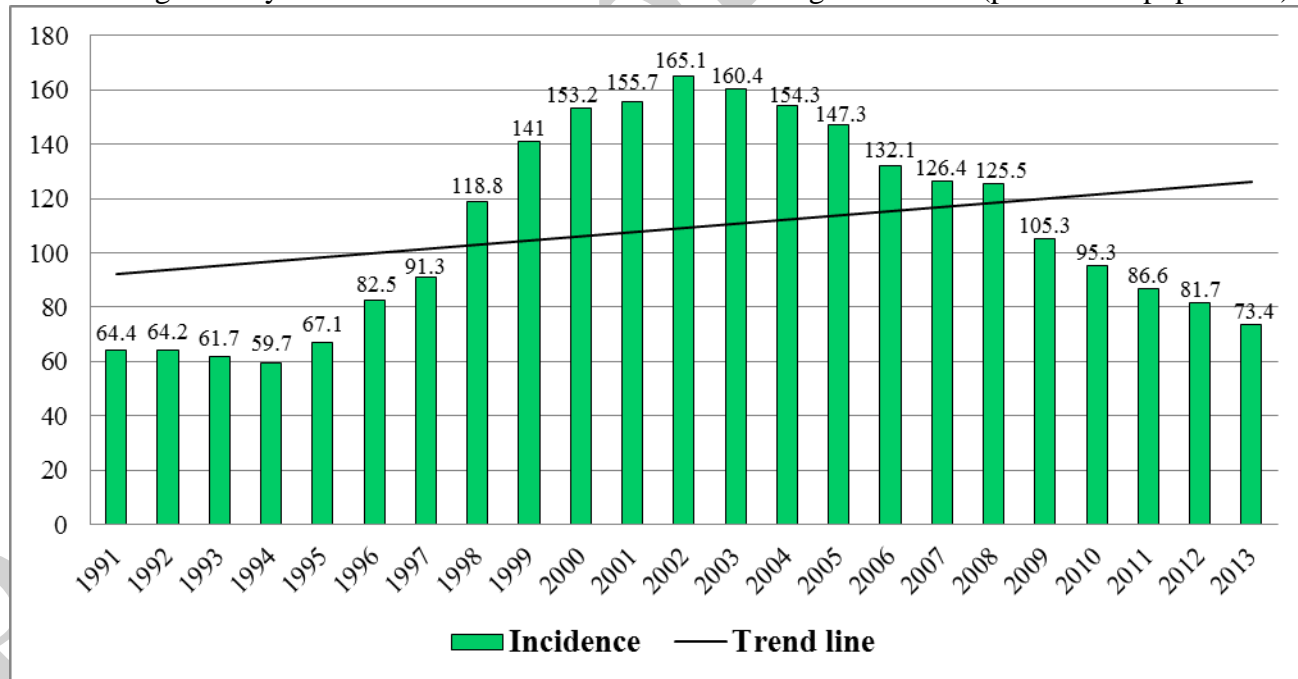
Materials and methods. We have conducted retrospective population study of all cases of tuberculosis in the Republic of Kazakhstan during 1991-2013. Accounts and records on tuberculosis for the studied period of time were processed and analysed.

Statistical processing was carried out on the basis of the applied program of statistical processing "IBM SPSS Statistics 20". Extensive and intensive indicators (P) were calculated.

Results and discussion. The republic falls into a number of regions with an unstable epidemiological situation of tuberculosis. The analysis of incidence revealed that since 1998 (morbidity rate made 118.8 per 100000 population) the increase has been noted and in comparison with previous year the incidence increased by 1.3 times. The peak of incidence was registered in 2002 and made 165.1 per 100000 people, and by 2013 decrease by 2.25 times (73.4 per 100000 population) was noted (figure 1).

Figure 1.

Long-term dynamics of incidence of tuberculosis during 1991-2013 (per 100000 population)



The epidemic process of tuberculosis during 1991 to 2013 is characterized by moderate tendency of increase of incidence, as rate of increase made 1.41. The theoretical predictable incidence in 2014 can make 127.79 per 100000 population. However, calculation of the top and bottom predicted value showed that incidence can take any value within the range from 97.71 to 160.61 (per 100000 people).

Rising incidence, first of all, is connected with a large reservoir of tuberculosis infection which maintained a high level of contamination. The considerable reservoir of causative agents is caused by a high proportion of eliminators of bacilli whose level on average made 59.6%. At the same time, the proportion of patients with forms of tuberculosis resistant to main chemotherapeutic agents is high (32.6%). Among all registered patients resistance made 26.7% for monopreparations, 42.4% for polypreparations and 30.9% for multipreparations. The resistance rate among newly discovered cases of the diseased made 21.8% for monopreparations, 29.4% to polypreparations and 48.8% to multipreparations. Among repeated cases of the disease resistance made 25.6% for monopreparations, 31.2% for polypreparations and 43.2% for multipreparations.

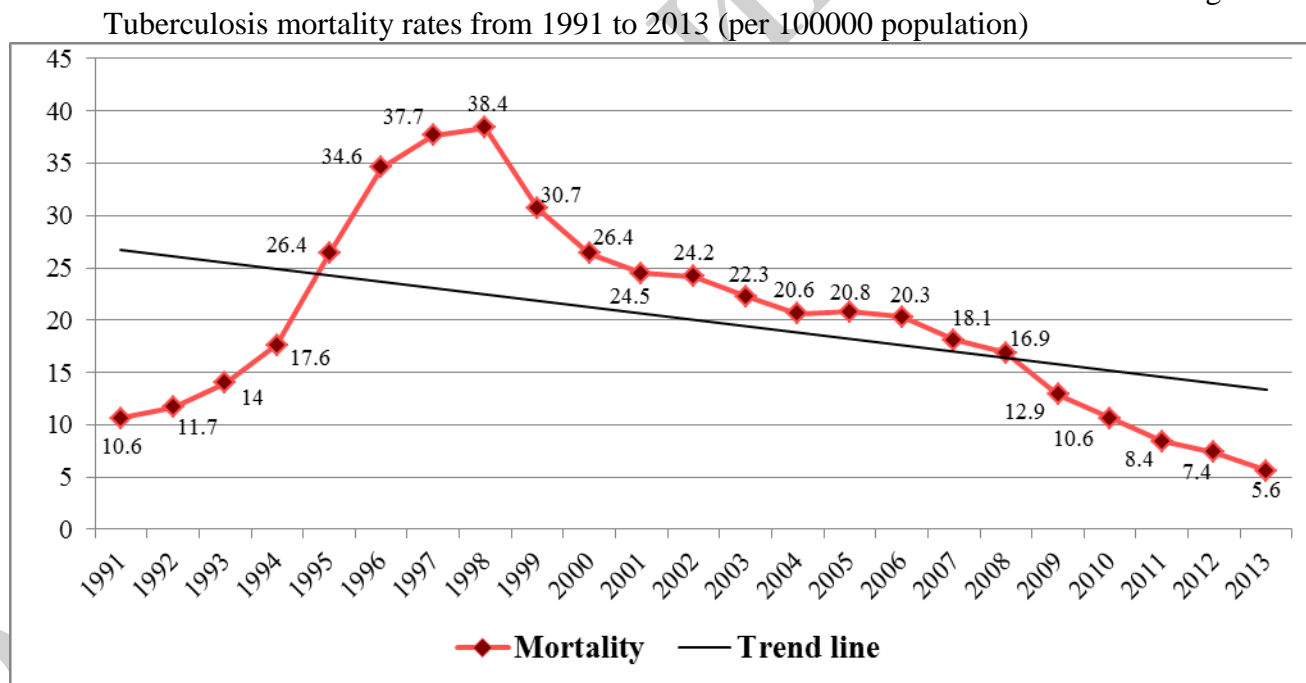
The next reason of rising incidence is low sanitary literacy of the population concerning tuberculosis, which is caused by the untimely reference of patients to the doctor which leads to development of destructive forms of pulmonary tuberculosis, which averaged 31.9%.

Rising incidence of teenagers by 2.0 times has been noted, thus, in 2013 6 cases were revealed against 3 in previous year. Intensive morbidity rate of teenagers in 2013 made 137.4 (per 100000 teenage population) against 79.7 in previous year.

High contamination of children, both common and initial, caused by the reservoir among adults has been revealed. In 2012 primary incidence among children made 4.9%, in 2013 – 3.8%. Crude incidence made 19.6% and 16.5% respectively. Among children decrease in an immune layer is observed, at the age of 6–7 it made 23.8% in 2012, and 33.5% in 2013. It is established that there is no possibility of efficient health improvement for children from the tuberculosis centers due to the absence of sanitariums with twenty-four hour stay and continuous schooling.

Analysis of mortality from 1991 for 2013 showed that high rates were registered in 1997 and 1998 and made 37.7 and 38.4 respectively (per 100000 people) (figure 2).

Figure 2.



Due to frequent detection of advanced and rapidly progressing forms of tuberculosis the mortality rate has increased. Increase in mortality from tuberculosis testifies to poor effectiveness of treatment (chemotherapy, first of all) and frequent late detection of patients with incurable forms of the disease.

Among the infected, people with residual post-tubercular changes after the past primary tuberculosis infection have the greatest risk of an endogenic reactivation of tuberculosis.

The risk of an endogenic reactivation increases in the presence of associated diseases, such as diabetes mellitus, gastroduodenal ulcer, hepatitis, alcoholism and drug addiction, mental diseases.

Increase in tuberculosis incidence has also been noted among the people who have long-term contact with the patients with tuberculosis, emitting bacillus Kochii. The tendency to stabilization and decrease in the main tuberculosis morbidity and mortality rates in recent years has been noted, but nevertheless the epidemiological situation in the territory of Kazakhstan remains tense.

Conclusion. The number of hard to cure forms of tuberculosis with multi-drug resistance is increasing; the high percent of violation of treatment regimens in the supporting phase remains. Long-term dynamics for the period 1993 – 2013 shows decrease in both morbidity and mortality rates. The reasons of incidence are connected with the large reservoir of this infection, which maintains high level of contamination, development of destructive forms of tuberculosis, high rate of eliminators of bacilli and patients with forms of tuberculosis resistant to main chemotherapeutic agents and low sanitary literacy of the population concerning tuberculosis. High contamination of children and teenagers has been detected.

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