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Brief Report

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Epidemiology of Tuberculosis in Adults (United States)

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Introduction

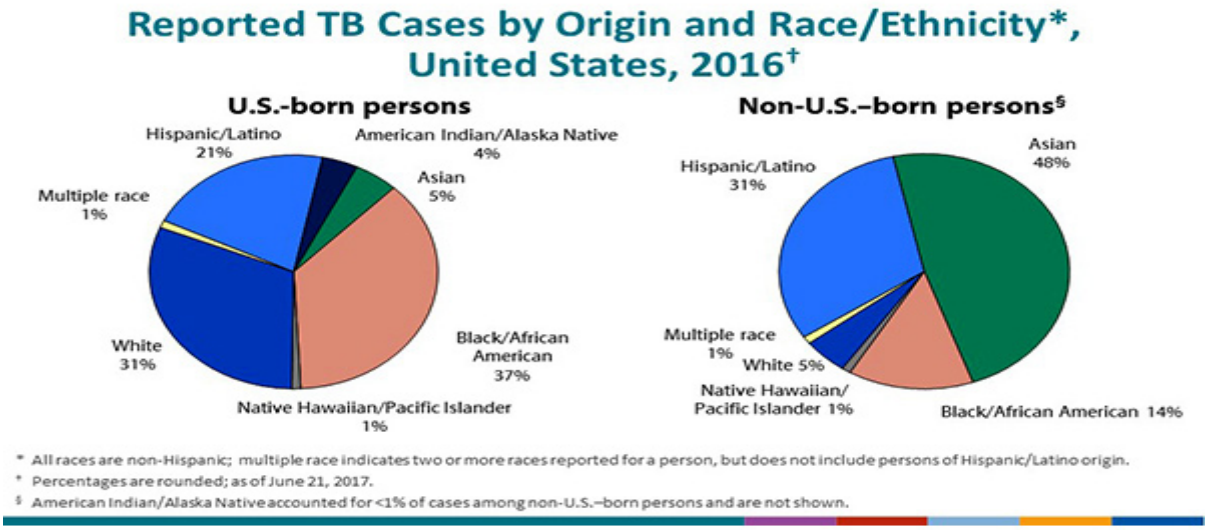
Tuberculosis (TB) is an infectious and chronic disease caused by a bacterium known as Mycobacterium tuberculosis specifically M. tuberculosis. There are different strains, and most are associated with drug resistance. TB remains a major threat in the United States since the pathogen was discovered in 1982. Approximately 32% of the global population is infected with Mycobacterium tuberculosis which represents 1.86 billion people [1]. The new cases are 8 million annually. The increased rates of TB infections among adults pose a health concern among the authorities. TB is a severe disease, and its importance to human health status cannot be underestimated. The fact that all the 50 states in the US recorded cases is a concrete reason to worry. A particular case of New York City points to a serious health concern as its incidence rate was higher than the national average. New York is among the other three states that have high counts of TB including Florida, Texas, and California [2]. The 528 deaths from TB in 2016 in the US send some signals to the impact on human health. The number was an increased figure from 470 casualties in 2015, hence showing the worrying statistics of the increased number of people perishing. TB among the adult population in the US should be studied because of the increased rates of infection despite a steady decline in the past two decades.

According to the CDC, the rate of decline in the US is remarkably too slow hence the increased trends points to a sad state of affairs. It was reported by the CDC that there were 9,105 cases of TB in the US alone in 2017 [2]. That was a slight percentile decrease of 1.6% compared to the previous year of 2016. The national prevalence of TB was placed at 2.8 cases per 100,000 people as reported by the CDC once again. The minority population in the US is said to bear the disease burden of TB when compared to other ethnic or racial groups. There is a growing population of people or adults who are at risk of acquiring TB. It is feared that TB will be a challenge to eradicate among adults in the US. That is because of the substantial burden of TB among older people such as the non-whites [1]. From this background perspective about TB, the paper discusses the epidemiology of TB among the adult population in the US. Further discussions on the causes or risk factors and the ways of mitigating the healthcare menace are also discussed.

TB prevalence in the US cuts across all the 50 states, but there are those with more cases recorded than others depending on several compounding factors. The most recent data shows that the morbidity rate in the US for TB stood at 528 deaths in 2016. As reported earlier in the text, the minority population is the most affected by TB. The chart below provides a graphical presentation of the incidence rates among various ethnic or racial groups in the US:

Ethnicity/Race	Incidence Rate of TB Cases per 100,000 - 2017	Percentage of Reported TB Cases in the United States - 2017
American Indians or Alaska Natives	3.9	1%
Asians	17.7	35.70%
Blacks or African Americans	4.7	21%
Native Hawaiians and other Pacific Islanders	19.1	1.20%
Hispanics or Latinos	4.4	28.20%
Whites	0.5	11.80%

Table 1: Incidence rates of TB cases [2].



Source: https://www.cdc.gov/tb/statistics/surv/surv2016/default.htm

The data indicates the TB incidence among the various ethnic and racial groups, and it is apparent that the most affected groups are the minorities especially the blacks and Asians. The chart above also indicates the percentages of TB cases among U.S born individuals and foreign born individuals. The foreign born Asians with significantly higher TB rates with a 48% when compared to U.S born Asians with just 5%. It appears that minorities are more susceptible to get TB than their counterparts in other races. The data present recent transmissions in these populations hence serve an essential database for public health intervention programs to curb the reemergence of new cases. TB is reported to a challenge in controlling, diagnosing, and treatment. That is why it is important to reduce TB related disparities by focusing on prevention and control mechanisms on a population basis. The African-American population and Asians statistics are higher than expected based on their number in the US. Their genotype may be one of the reasons that make them more susceptible to the infection than other ethnic groups. The Asians, in particular, are the ones who are leading regarding the latest American trends.

It is also revealed that age-wise, the adult strains of TB tend to be less deadly than those that affect children. The pediatric TB is more life-threatening but adult aged 65 years and above are at increased risk of contracting TB. As of 2008, statistics indicated that they accounted for 21.9% of all the TB cases in the US [1]. TB tends to increase with age and men compared to women are more vulnerable based on gender variations. The battle against TB in the US should focus on the older adult populations more so men and the non-white or minority populations.

When it comes to places that are profoundly affected by the transmission, it is reported that correctional facilities are among the highest breeding grounds for TB during diagnosis. CDC estimates that, at least 4-6% of all the TB cases in America occur among the incarcerated individuals. They represent a risk group that is more prone to TB than the average population. The other public health concern is of people without homes. They also represent a section of the population in the US that is prone to TB [2]. It cannot be denied that health disparities do occur in populations and that is why some groups of people are more susceptible to TB despite preventive measures being put in place. Factors such as geographical location, age, race, income, and gender may influence disparities. Another report is that TB is common among people that originated from high-risk countries. Sometimes disparities in public health are also influenced by social factors such as racism [3]. Some races can be neglected when it comes to access to public health services and provision of social infrastructures that may largely help in the prevention of transmission and curative services. Summarily, both genetic and environmental factors interplay to influence possible risk factors for TB [4].

According to the CDC, the national prevalence rate indicates that there were 9,105 TB cases as of 2017 in the US. When it comes to the incidence rate, 2.8 cases were reported per 100,000 people [2]. The local state of New York is among the highest with TB cases with above the national average incidence rate of 2.8 cases per 100,000 people. The New York Department of Health records a total of 2,425 cases of TB between 2013 and 2015 from a population of 19,731,048. The information is presented in the figure below:

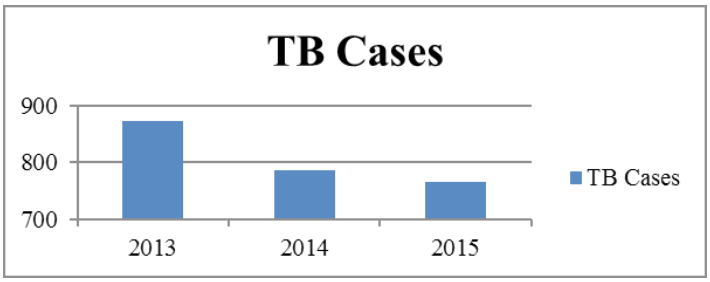


Figure 1: A bar graph showing TB Incidence between 2013 and 2015 in New York State (Source: New York Department of Health- https://www.health.ny.gov/statistics/chac/general/g36.htm).

The graph reflects that TB rate of infection reduced between 2013 and 2015 and thus a 2.7% decrease in morbidity. Most of the cases were reported in New York City. The Asians were the most affected statewide as they recorded the highest incidence rate compared to other population groups. It is good news that the US has one of the lowest TB case rates globally based on recent surveillance by the CDC. As stated earlier, there are still too many people suffering from TB, and a lot still needs to be done. The rate of TB infection among the none-US born people is 15 times more than those who are not native born [5]. According to the CDC 2017 statistics, the TB incidence rates among states ranks New York at fifth position with 806 cases [2]. New York and the other three states mentioned earlier represent half of the total US TB cases as of 2017. In general, the TB case counts or rates in the US have significantly reduced since 2015.

The common risk factor of TB in the US is attributed to reactivation of Latent TB Infection (LTBI) especially in high-risk populations [5]. That is different from those infected by recent transmission. Also, the emergence of HIV infection has reduced the immunity of many people. HIV is associated with most of the TB cases. The other cause for increased cases is the reduction of TB control resources. The matter has worsened with the influx of people from high-risk populations that come and seek citizenship in the US. The country of birth is, therefore, a common risk factor as those that come from countries with high prevalence rates tend to be highly susceptible to the infection. The US-born and the non-US born is a common risk factor [2].

The other medical risk factor is diabetes, and it is associated with some of the TB complications. It should also be noted that infectious TB is another risk factor especially when healthy persons are exposed to infected persons who are not on treatment. When there is prolonged exposure to persons with TB, the risk of TB infection increases. This is common in places that are densely populated such as the correctional facilities. It is without no doubt that the US correctional facilities are a high-risk area. The inmate population poses a significant challenge to the US public health sector regarding the high rates of infections. It is also reported that the other population that represents a lot of risks is the homeless population [1]. They easily acquire and transmit to others because of HIV, substance abuse, and also a lack of adequate health services. When it comes to substance abuse, it weakens the immune system and renders the person susceptible to active TB infections. Drug resistance is also another risk factor which leads to challenges in the management of the disease. Most of the TB strains have developed resistance to some drugs.

It has emerged that the US is progressing well regarding the reduced cases of TB among its populations. It has also been revealed that millions of people in the US have latent TB infection. They are therefore at risk of contracting TB if not treated. There is an astonishing global statistic of 32% of the world population that is infected by TB. The US alone has 9,105 people with TB infections as reported in 2017. The shocking statistics implicate that more efforts need to be done to eliminate this deadly disease, especially among older adults. The decreasing rate of TB infections in the US should be a wake-up call to other countries to institute viable public health programs to mitigate or control the disease. It should not be the US or a one country affair but a global effort with all the stakeholders collaborating on the way forward.

TB can be eliminated when public and individual interventions are taken seriously. One of the public health methods that can be applied to limit the negative impact of TB on populations is finding the nature of the cause and dealing with it. For the case of the US, there has to be a distinction between recent transmission and LTBI. Through this, the appropriate tools will be put in place for both local and state TB programs to design effective public health intervention. There should be maintenance and strengthening of the TB control programs in all the states to reduce the impact of TB in the US population. The treatment of LTBI among high-risk populations should be prioritized. It is also prudent that those infected should be loyal to complete their medications. Prompt and effective TB treatment is vital in controlling or preventing transmission. More resources should be channeled towards advocacy programs so that the population is well conversant with TB etiology, epidemiology, and available intervention programs. More surveillance on the risk factors should be emphasized so that the root causes are dealt with thoroughly. Evidently, the war on TB in the US among the adult population can be won by addressing the burden in the population. There should be effective and accessible diagnosis and treatment in all the population demographics. It is prudent that healthcare disparities are addressed within the various groups in the population.

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