

**Editorial Drug Resistant TB and Bone Marrow Stem Cells****Mohsin Masud Jan**

Editor

A person has drug resistant TB if the TB bacteria that the person is infected with, will not respond to, which means that they are resistant to, at least one of the main TB drugs. Drug susceptible TB is the opposite. If someone is infected with TB bacteria that are fully susceptible, it means that all of the TB drugs will be effective so long as they are taken properly. It still means that several drugs need to be taken together to provide effective TB treatment.

Drug susceptibility testing is how you find out which drugs will be effective at treating drug resistant TB.

It is more difficult to cure TB which is drug resistant than TB which is fully susceptible, but it is still possible.

There are two ways that people get it;

Firstly, people get acquired drug resistant TB when their TB treatment is inadequate. This can be for a number of reasons, including the fact that patients fail to keep to proper TB treatment regimens. It can also be that the wrong TB drugs are prescribed, or substandard TB drugs are used for treatment.

Secondly, transmitted or primary drug resistant TB result failure the transmission of drug resistant TB from one person to another. The occurrence and prevention of primary drug resistant TB has largely been neglected during the development of global programs to end TB.

New tools have enabled researchers to investigate this further. They have found that primary resistant plays a much greater role than previously thought.

Our best estimates are that globally at least 75% to 80% is now primarily transmitted, as opposed to primarily acquired during treatment.

So simply doing a better job of treating drug susceptible TB is no longer sufficient for controlling drug resistance. To control it, it is necessary to specifically diagnose and treat it.

There are two main types, MDR TB and XDR TB.

MDR TB is the name given to TB when the bacteria that are causing it are resistant to at least isoniazid and rifampicin, two of the most effective TB drugs.

XDR TB is defined as strains resistant to at least rifampicin and isoniazid. This is in addition to strains being resistant to one of the fluoroquinolones, as well as resistant to at least one of the second line injectable TB drugs amikacin, kanamycin or capreomycin.

MDR TB and XDR TB do not respond to the standard six months of TB treatment with “fresh line” anti TB drugs. Treatment for them can often take two years or more and requires treatment with other drugs that are less patent, more toxic and much more expensive. However, there are now starting to be some shorter regimens for treatment, based on the Bangladesh regimen.

RR-TB is Rifampicin resistant TB. Rifampicin resistant TB requires treatment with second line drugs. Statistically RR-TB includes MDR-TB which is resistant to both rifampicin and isoniazid.

Globally, there were an estimated 465,000 incident cases of rifampicin resistant TB in 2019. 78% are estimated to have had multidrug resistant TB.

By country India had 27%, China 14%, and the Russian Federation 8%.

In 2019 there were an estimated 182,000 deaths from MDR/RR-TB.

The 30 high burden MDR TB countries are:

Angola, Azerbaijan, Bangladesh, Belarus, China, DPR Korea, DR Congo, Ethiopia, India, Indonesia, Kazakhstan, Kenya, Kyrgyzstan, Mozambique, Myanmar, Nigeria, Pakistan, Papua New Guinea, Peru, Philippines, Republic of Moldova, Russian Federation, Somalia, South Africa, Tajikistan, Thailand, Ukraine, Uzbekistan, Viet Nam, Zimbabwe.

There is more about high burden Tb countries and

TB in China

TB in India

TB in Nigeria,

TB in Pakistan

and TB in South Africa.

Patients with potentially fatal “superbug” forms of tuberculosis (TB) could in future be treated using stem cells taken from their own bone marrow, according to the results of an early stage trial of the technique.

The findings, made by British and Swedish scientists, could pave the way for the development of a new treatment for the development of a new treatment for the estimated 50,000 people worldwide who have multi drug resistant (MDR) or extensively drug resistant (XDR) TB. In a study in the Lancet medical journal, researchers said that more than half of 30 drug resistant TB patients protected with a transfusion of their own bone marrow stem cells were cured of the disease after six months. “The results show that the current challenges and difficulties of treating MDR-TB are not insurmountable, and they bring a unique opportunity with a fresh solution to treat hundreds of thousands of people who die unnecessarily,” said TB experts Alimuddin Zumla at University College London, who co-led the study. TB, which infects the lungs and can spread from one person to another through coughing and sneezing is often falsely thought of as a disease of the past. In recent years, drug resistant strains of the disease have spread around the world, battling off standard antibiotic drug treatments.

The World Health Organization (WHO) estimates that in Eastern Europe, Asia and South Africa 450,000 people have MDR-TB and around half of these will fail to respond to existing treatments. TB bacteria trigger an inflammatory response in immune cells and surrounding lung tissue that can cause immune dysfunction and tissue damage. Bone marrow stem cells are known to migrate to areas of lung injury and inflammation and repair damaged tissue. Since they also modify the body’s immune response and could boost the clearance of TB bacteria, Zumla and his colleague, Markus Maeurer from Stockholm’s Karolinska University Hospital, wanted to test them in patients with the disease.