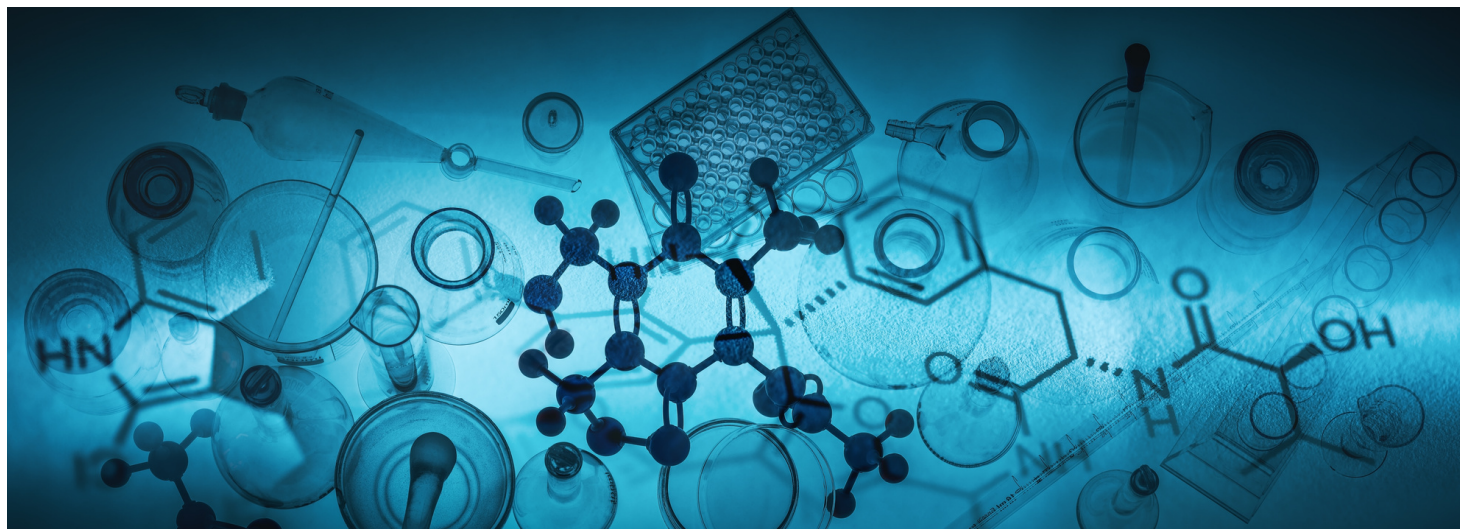


THE MONTHLY DOSE

Official Newsletter of The Mueller Health Foundation



WHAT'S NEW AT THE MUELLER HEALTH FOUNDATION:

We at The Mueller Health Foundation were very excited about participating in a webinar titled “Building a Community Care Model for Drug-Resistant (DR) TB in India” hosted by our grantee REACH this month.

The webinar featured a knowledge session on DR TB in India led by global DR TB experts, a screening of a short film on DR TB and the official release of a publication on Community Care Models for DR TB.

We at The Mueller Health Foundation were thrilled to support this work and to provide the closing remarks for the webinar.

Stay tuned for more updates!

LATEST NEWS: SHOWCASING STORIES OF TB SURVIVORS

We at The Mueller Health Foundation continue to be deeply committed to sharing personal stories and giving a voice to TB patients, TB survivors, TB practitioners, and all the friends and family members of the people who have been affected by the disease. We are also proud to continue our support of our HeroRat Carolina who has been trained by APOPO, a charity focused on training rats to detect TB in sputum samples across Africa. APOPO has put together a wonderful collection of success stories from TB survivors and this month we would like to highlight Ashura's story, a 29 year old from Zanzibar:

Ashura had been through a lot. The stress of moving often and living with various family members fueled what Ashura suspected to be stomach ulcers. One day, she was writhing in pain and her father rushed her to the hospital. When she arrived at the hospital, she was coughing so hard that she vomited blood. She was attended to and got treatment to calm down the ulcers. After talking to the doctor, they suggested to also check for tuberculosis by coughing up sputum (liquid from the lungs) and submitting two sample containers for diagnosis. The next morning, she was called back to the clinic, and they informed her that she had TB. They also told her that APOPO had found her illness using trained rats. Ashura was very grateful for these special rats and that APOPO could confirm her illness. At first, Ashura was a little afraid because she did not really understand what TB was and that there was a cure. But they explained that it was a bacterial infection and they started her on TB treatment immediately. Having TB brought more challenges for Ashura at home: She was isolated by her stepmother even after she was no longer contagious. She was separated not just from eating with her family, but she had to cook for herself with separate dishes in a separate room and was not allowed to be around them at all. This was a very lonely time for her and although she tried to talk to her family and teach them what she had been taught, her stepmother was adamant she did not want her around. This was a turning point for Ashura and hardened her resolve for independence. Once she was declared no longer contagious, she enrolled in seamstress training. Saving money from the clothes she made for people, she eventually was able to move out and started renting a room near the shop in Tandika. To read her full story please follow the link here: <https://apopo.org/what-we-do/detecting-tuberculosis/success-stories/ashura/>

For more news, please also take a look at our top 3 picks for **April** in this newsletter, where we highlight novel research findings and news around the prevention and treatment of tuberculosis around the world.

MHF TOP PICKS FOR APRIL

Every month, we at the Mueller Health Foundation like to showcase interesting news and updates in the field of tuberculosis (TB). Below are our top 3 picks for April:

1. Study Reveals Lasting Lung Damage in Tuberculosis Survivors

New research being presented at this year's ESCMID Global Congress (formerly ECCMID) has found compelling evidence that tuberculosis can have a lasting impact on the lungs of individuals who have been successfully treated for the disease. The meta-analysis included data on 75,631 individuals from 15 studies conducted in 17 countries with varying TB incidence and income levels. The results as a whole point to the TB survivors having smaller lungs (restrictive disease) and narrower airways with slower air flow (obstructive disease). This means that the breaths they take are smaller and take longer; breathing is less efficient and less able to respond to increased ventilatory demands such as during exercise. Analysis of data from five of the studies showed the TB survivors to have 65% higher odds of airflow obstruction (AFO) than the healthy controls. The results suggest TB can leave a lasting and widespread impact on the lungs, especially in terms of how the airways are structured. This valuable insight can help guide rehabilitation strategies and, in the longer term and aid in the development of new therapies. To learn more, you can access the full article at: <https://www.news-medical.net/news/20240415/Study-reveals-lasting-lung-damage-in-tuberculosis-survivors.aspx>

2. Aerosol Human Infection Model Could Give Hope for Future TB Vaccine Development

The University of Oxford researchers have for the first time established a controlled human infection model for tuberculosis that infects people via the lung, which is the way TB enters the body. The clinical trial, which used the BCG vaccine delivered via aerosol into participants' lungs, is a first step towards establishing a challenge model that can be used to test new TB vaccines. The BCG vaccine was used in this trial because it is a live attenuated strain of *Mycobacterium bovis*, which is related to *Mycobacterium tuberculosis*, the bacterium that causes tuberculosis in humans, and BCG is known to be safe in humans. Previous human challenge studies had administered the BCG in the arm, but this method does not mimic the natural route of TB infection into the lungs, which is why the aerosol method was investigated. When the researchers did lung washes of the participants, they recovered BCG, which is a positive sign in a challenge study. When researchers eventually test a new vaccine using this method, if BCG is not found in the lung washings it would suggest that the vaccine has induced protection. To learn more, you can read about the research here: [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(24\)00143-9/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(24)00143-9/fulltext)

3. Study Finds Tuberculosis Bacteria also Present in 90% of Those with Symptoms Who Are Not Diagnosed with TB

Researchers from the University of Cape Town and Amsterdam UMC have analyzed results from over 100 patients who presented themselves to clinics in South Africa. Aerosol samples were collected in a community-based dedicated TB aerobiology lab using a novel method optimized to find low concentrations of Mtb, the bacterium causing tuberculosis. These samples were then used to detect the presence of Mtb, finding it in the samples given by 90% of patients, including those that had tested negative by sputum for tuberculosis. Aerosol samplings were repeated at three separate timepoints over six months for all participants. The presence of Mtb decreased in those on treatment and surprisingly also decreased in those not on treatment over this time period. Nevertheless, 20% of all participants continued to test positively for Mtb in aerosol after six months. This suggests that transmission can continue over a period longer than previously thought. Furthermore, a recent study from the University of Cape Town suggests that tuberculosis could be present in the lungs for up to four years prior to the onset of symptoms. You can read the full paper here: <https://www.medrxiv.org/content/10.1101/2022.11.14.22282157v2>

DID YOU KNOW?

Tuberculosis cases are on the rise in the U.S., according to a report published by the Centers for Disease Control and Prevention this month. Here are some interesting facts and provisional data from the report:

- While the United States has one of the lowest rates of TB in the world, according to the report, researchers found that cases increased 16% from 2022 to 2023.
- Since the COVID-19 Pandemic, cases have increased annually, topping 8,300 in 2022 and hitting 9,615 in 2023. This provisional figure marks the highest number of cases reported in the country in at least a decade, as the U.S. saw 9,556 TB cases in 2013.
- Among people with TB whose place of birth was known, researchers said the vast majority of cases, approximately 76%, occurred among those born outside the U.S.. The rate was also highest among that group at 15 cases per 100,000 – up from 13.1 in 2022.
- Among people born in the U.S., rates were highest among Native Hawaiians or other Pacific Islanders (NHOPI) and American Indian or Alaska Native people. Among those born outside the country, rates also were highest among NHOPI people, followed by Asian people.
- Certain areas in the U.S. saw higher rates of TB than others. The five states with the highest rates of TB in 2023, based on the provisional data ranked from highest to lowest, were: Alaska, Hawaii, California, New York, and Texas.
- The CDC report also notes that most cases in the U.S. are tied to reactivation of latent TB bacteria within a person, rather than “recent transmission.”

Information Source:
https://www.cdc.gov/mmwr/volumes/73/wr/mm7312a4.htm?cid=mm7312a4_w