



Meeting Report

UNDERNUTRITION CAUSES 20 PERCENT OF WORLD'S TUBERCULOSIS.

WHAT TO DO?

Stop TB Partnership side-event ahead of the Tokyo Nutrition for Growth Summit 2021

Monday, 6 December 2021, 11.00-13.00

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THE STOP TB PARTNERSHIP

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<https://www.stoptb.org/>

You can watch the recording of this meeting at:

<https://www.stoptb.org/event/undernutrition-causes-20-of-worlds-tuberculosis-cases-what-to-do>

<https://youtu.be/4InoRO6fvDw>

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Executive summary

This meeting was held within the context of the Tokyo Nutrition for Growth Summit 2021. It emphasized the importance of nutrition as an integral part of the TB care and treatment package and examined the connection between nutrition, diabetes and tuberculosis (TB). The meeting aimed to increase understanding of the co-relationships and strengthen collectively actions in addressing them especially at this time of the COVID-19 pandemic and dwindling funding.

Two presentations were made: (1) TB and undernutrition: a scientific and an ethical imperative and (2) Integrated tuberculosis and diabetes mellitus care. The first presentation featured preliminary findings of an ongoing field trial intervention in India to investigate whether providing nutritional support, mainly food baskets and multivitamins, to patients could improve treatment outcome and reduce TB incidents. The second presentation focused on the work of The Union on the integration of tuberculosis and diabetes mellitus care into routine care in Uganda.

During the panel discussion that followed, panellists gave their opinions and responded to comments and questions based on the perspectives of the organizations they represented. Ingrid Schoeman from TB Proof, South Africa, gave a personal testimonial of how she survived TB in 2012, attributing her recovery partly to the good nutrition she had. “To be honest with you, I don't think I would have survived had I been faced with malnutrition, food insecurity, or hunger,” she said.

Key action points from the meeting include:

- Integrating TB and nutrition as part of a package of high-quality comprehensive care and make nutrition an essential TB prevention.
- Implementing TB treatment as an integrated patient-centred care within healthcare system and social protection programmes that provide support to individuals and their families, including counselling, nutrition support, social protection, and prevention of stigma and discrimination.
- Assessing all TB patients at baseline (including nutritional assessment) using the [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#), irrespective of whether they are drug-resistant or drug-susceptible, to enable risk stratification and identification of patients who are ill.
- Scaling-up nutrition and TB activities programmatically to reach individuals who need TB and nutrition interventions.
- Conducting advocacy and multisectoral outreaches and awareness among TB and non-TB stakeholders about the connection between nutrition and TB, including presenting TB and nutrition issues for discussion at high-level decision-making events to secure the needed political commitments and actions.
- Fostering multistakeholder partnerships, with the involvement of the nutrition community, to boost TB care and treatment, strengthen integration and enhance sustainability of TB and nutrition programmes within the general support system of governments.
- Supporting countries in revising their national nutrition and TB policies and strategies to make them current and more applicable to local context.

- Facilitating research, annual nutritional assessments and nutritional surveillance to provide evidence for advocacy and for strengthening TB and nutrition integration.
- Revising and updating the current [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) and developing new guidelines as necessary.
- Encouraging and facilitating uptake and use of the [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#), including training field staff in the use of the guidelines and other tools.
- Taking the issue of nutrition beyond maternal and child health and emergency by including the men and adults in nutrition programming.
- Empowering community health workers adequately so they can support care at the household and community, including providing everything they need to carry out their assignments such as personal protective and infection prevention and control equipment.
- Supporting education of patients, the community (including community and religious leaders) and community workers on the importance of nutrition and assessment of patients for nutrition status, and how to link TB patients to appropriate support mechanism.
- Harnessing the platform and opportunities that COVID-19 has created to strengthen TB response.

1. Background

Before the COVID-19 pandemic, TB was the world's number one killer infectious disease and continues to be the most common cause of death from a single infection in most low- and lower-middle-income countries. In 2020, TB claimed 1.5 million lives globally and made about 10 million people ill.

Nutrition and TB are closely linked; undernutrition increases the risk of TB and TB increases the risk of undernutrition. Diabetes, also linked to nutrition, increases the risk of developing TB. Globally, nearly 20% of TB is attributable to undernutrition and 4% to diabetes.

The Stop TB Partnership held a webinar with the theme “Undernutrition causes 20% of world's tuberculosis cases. What to do?” as a side-event at the Tokyo Nutrition for Growth Summit 2021. The webinar was hosted by the Ministry of Health, Labour and Welfare of Japan. It aimed to highlight the linkage between tuberculosis, undernutrition and diabetes and recommend sustainable integrated solutions to address the three conditions.

The objectives of the webinar were to:

- discuss the situation and challenges of nutrition and TB in the COVID-19 era;
- explore how nutrition and TB care can be improved during and after COVID-19; and
- facilitate multisectoral and multilateral engagement and partnerships to integrate and improve nutrition and TB care.

The webinar provided opportunity for constructive engagement through presentations and a panel discussion by experts from the Stop TB Partnership, WHO, World Food Programme (WFP), Global Fund for AIDS, Tuberculosis and Malaria (Global Fund), The Union Uganda, TB Proof, and Yenepoya Medical College India. It helped increase awareness about TB, undernutrition and diabetes comorbidities through a rich discussion to inform pragmatic and sustainable interventions on nutrition and TB globally.

This report presents a summary of presentations and discussion during the webinar.

2. Opening

Lucica Ditiu, Executive Director, Stop TB Partnership, opened the meeting. She introduced the subject and context of the discussion and the presenters. She thanked the speakers, panellists and participants for taking the time to attend the meeting. She said the meeting held within the context of the Tokyo Nutrition Summit and that nutrition is an extremely important health issue. She thanked the Japanese Government, particularly Dr Hajime Inoue, Assistant Minister, Ministry of Health, Labour and Welfare, for hosting the meeting.

Lucica said although tuberculosis has been in existence for thousands of years many people are still afraid of it, just as they are afraid of COVID-19. She said instead of being afraid of TB we should make efforts to understand more about it. She noted that discussions in the meeting would help us understand more about tuberculosis and its relationship with nutrition, diabetes and other nutrition-related diseases. She said for many years a lot of progress has been made in TB/HIV coinfection interventions, but unfortunately, however, TB/HIV coinfection accounts for 10-11% of all people with TB in the world and TB still kills one in three people living with HIV.

Lucica said the session was about malnutrition and nutrition and their implications, noting that 20% of people with TB lack proper nutrition and discussing the issue would help understand the connections and know what to do. She said growing up in Romania, a country with many TB cases, she heard people talk about eating vegetables, eggs and good food to prevent them from getting TB. Such recommendations were often made without reference to any data, but these days there is data, knowledge and science that can help us know what the problem is and what to do. She however noted that a lot of misinformation and false statements about TB are being shared over social media, making today's session very important in providing the right information. The conversation, therefore, must be continuous, she said.

Lucica emphasized the importance of the discussions in understanding what to do collectively especially at this time that focus is on COVID-19 and funding for TB is almost altogether being neglected.



“Many people are afraid of COVID-19 and many are still afraid of TB. Nothing in life should be feared, it just must be understood. We are understanding more about tuberculosis and the more we understand the less we will fear.”

Lucica Ditiu



3. Presentations

There were two presentations:

- a. TB and undernutrition: a scientific and an ethical imperative, by Prof. Anurag Bhargava from the Yenepoya Medical College Mangalore
- b. Integrated Tuberculosis and Diabetes Mellitus Care, by John Paul Dongo, The Union, Uganda

a. TB and undernutrition: a scientific and an ethical imperative

Prof. Anurag Bhargava, Yenepoya Medical College, Mangalore

Prof. Bhargava's presentation was about an ongoing field trial intervention to investigate whether providing nutritional support, mainly food baskets and multivitamins, to patients could improve their treatment outcomes and reduce TB incidents. It featured the story of an 18-year-old boy in eastern India, a participant in the field trial, who weighed only 26 kg and had a body mass index (BMI) of 10.7 at baseline. With the therapy and nutritional support provided in the trial, the boy gained 16 kg. One in every two patients in the trial had a BMI less than 16, indicating severe undernutrition, and one in every four adult patients weighed less than 35 kg. Published data shows that this is the situation in other parts of India.

One question is: What is the prevalence of undernutrition and severe undernutrition among patients in TB programmes around the world? This is unknown because heights are not being recorded as a routine in many TB programmes, despite recommendations by the [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#). Without the height there cannot be accurate estimation of BMI.

Another question is: What are programmes doing to address the problems of patients in similar situation? The 2013 [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) recommends that because of the bidirectional relationship between TB and undernutrition, nutrition assessment, counselling and management should be considered integral components of TB care, and that all TB patients, as with all other patients, should have access to adequate nutrition, including macronutrients and micronutrients. Yet a Cochrane review in 2016 concluded that there is not enough evidence of the impact of nutritional supplementation on treatment outcomes.

Thirdly, one in every three individuals in the trial has a BMI of less than 18.5, is it possible to reduce TB incidence with such a high prevalence of a risk factor? The links between TB and undernutrition have been well appreciated since the pre-chemotherapy era, and in the mid-20th Century it was agreed that nutrition could be an important part of prevention and therapy for TB patients.

Prof. Bhargava said the "very influential" monograph by Dr Scrimshaw and colleagues shows the interactions between nutrition and infection, referring to TB extensively, he noted that not much research has been done after that work. He further showed the pathway for the development of TB from exposure to infection, to disease and then the outcomes. He said the key interest is the transition between infection and disease and the outcome after a person develops a disease. He noted that TB

infection only occasionally leads to TB disease and that a well-functioning immune system could prevent the transition from infection to disease, and this is affected by the state of nutrition and other comorbidities like HIV and diabetes. He emphasized that the state of the immune system is an important parameter affecting outcome because disease severity is dependent on the immune status, and of course, the level of TB care. Therefore, because there is no effective vaccine, interventions can focus on reducing the transition from TB infection to disease by ensuring that everybody has a well-functioning immune system and by evolving a more comprehensive and effective patient-centred care model, which will also address comorbidities like undernutrition and diabetes more effectively.

Undernutrition at the community level is a major driver of TB globally because it is the most common cause of immunodeficiency. It is referred to as nutritionally acquired immunodeficiency syndrome and it is a risk factor for TB mortality. It is easily identifiable and more easily treatable than other comorbidities. It has been established in cohorts of patients with drug-resistant TB that a good baseline weight and an adequate weight gain is a good predictor of treatment success, thus making nutrition an added value even when drugs are not working. Although there is not enough data on the nutritional status of patients, available data shows that undernutrition is a major driver of TB in South Asia, and it accounts for more than 43% of TB cases globally.

All the 2800 patients in the trial referred to in this presentation have completed six months of therapy and preliminary results show 4% mortality. It is a cohort of severely undernourished people, less than 6% reported in a cohort study in 2018. This shows that there is more than half reduction in mortality when compared to historical cohorts.

Several cohort studies analysed in a systematic review published in 2010 show inverse and exponential relationship between BMI and TB incidence. There is evidence of declining TB mortality and TB burden in Western countries even before the first vaccine or therapy was discovered, which proves that improved living conditions can contribute to TB reduction. Recent modelling studies and examples again from the pre-chemotherapy era show that nutritional interventions can be effective in decreasing TB incidence.

At the prisoner of war camp in Germany, addition of a Red Cross ration of 1000 calories and 30 g protein



“If we are looking for a vaccine for tuberculosis, we already have one. It is adequately balanced nutrition. It works very well in settings with poverty and undernutrition, it is orally active, it can be mass-produced, it is therapeutic, and it is safe for everyone, including TB patients.”

Prof. Anurag Bhargava



to the diet led to more than 90% reduction in incidence among British soldiers compared to their Russian counterparts who lacked access to this ration. Analysis of data from the Papworth village settlement shows that a social intervention that emphasized adequate nutrition and better housing led to dramatic reduction of TB incidence in household contacts, although it did not reduce TB infection.

Prof. Bhargava likened a balanced diet to a vaccine for tuberculosis, which, he said, would work very well in settings with poverty and undernutrition. He said this “vaccine” is orally active, polyvalent in impact on mortality due to other diseases including in children, can be mass-produced, safe for women and can work even for TB patients. He said communities need this kind of intervention to address the TB problems. He acknowledged that the End TB Strategy is a comprehensive strategy and should discuss undernutrition as part of the risk factors and social determinants.

b. Integrated tuberculosis and diabetes mellitus care

John Paul Dongo, The Union, Uganda

Mr Dongo made a presentation of some of the work of The Union Uganda country office on integration of tuberculosis and diabetes mellitus care into routine care. He noted that diabetes mellitus is a known risk factor for TB and that people with diabetes usually have about 2-3 times higher risk of developing TB than people without diabetes. He said within their healthcare facilities, people with TB and diabetes mellitus had a higher risk of death during TB treatment, a risk of TB relapse after treatment completion, poor glycaemic control, developing diabetes mellitus complications, and usually took longer to achieve sputum conversion during the intensive phase of treatment.

A 2014 cross-sectional survey by the Government of Uganda estimated diabetes mellitus prevalence in the general population to be about 1.4%, but this figure has continued to increase over time. There were no known prevalence figures of diabetes mellitus among TB patients at that time. The Union had no intervention on TB/diabetes mellitus integration at the time, therefore, the project design was based mostly on the concept and approach used in interventions in China and India in 2011 and 2012.

He noted the existence of two guidelines that most people working in TB response would know: The Collaborative Framework for Care and Control of Tuberculosis and Diabetes and A Guide to Essential Practice, which is used in the management of diabetes mellitus and tuberculosis.

The intervention by The Union in Uganda was a two-year (2016 and 2017) cross-sectional observation study funded by the World Diabetes Foundation. The objectives were to carry out routine screening of diabetes mellitus among persons with TB, and to generate evidence for advocacy for programme support and scale-up. It was conducted in 10 public and private health facilities in underprivileged communities in Kampala in collaboration with the national TB programme, the Department of Non-communicable Diseases and Kampala Capital City Authority.

The interventions included sensitization of the Ministry of Health; stakeholder workshop to develop guidelines, standard operating procedures, training manuals, and algorithms for routine diabetes mellitus screening among persons with TB; training of healthcare workers to conduct diabetes mellitus screening among persons living with TB; supply of project sites with glucose testing strips and weighing scales; customization of registers to document TB and diabetes mellitus-related work; provision of

height boards to healthcare facilities; review meetings; and capacity building, including post-training onsite mentorships and establishment of a referral mechanism for TB and clinic facilitators.

The project found the prevalence of diabetes mellitus among screened persons with TB to be about 2.3%. A total of 4500 persons with TB were diagnosed in the 10 healthcare facilities supported, out of which 4000 were screened for random blood glucose levels. Patients with random blood glucose reading of 6.1 m/l were tested for fasting blood glucose. Some 1000 persons with TB were screened for diabetes mellitus, of which 92 were diagnosed with diabetes mellitus. Of these 92, about 71% were newly diagnosed with diabetes mellitus and 88 of them were referred to diabetes mellitus clinics for routine care. Unfortunately, four of those diagnosed with diabetes died shortly after TB registration.

Several lessons were learned from the project. One, the success of the project depended a lot on the close collaboration between key stakeholders and relevant ministry of health programmes, particularly the National TB Programme and the Department of Non-communicable Diseases. The initial stakeholder meeting helped raise awareness and buy-in among stakeholders. The development of standard guidelines, standard operating procedures and training materials along with supportive supervision helped project facilities implement according to the set criteria; they were able to carry out appropriate documentation using the reporting tools. The mentorship visits by the project team ensured that healthcare facilities could maintain the standards and address any challenges, and the review meetings provided a good platform for assessing progress and sharing lessons. Conducting training at health facilities helped secure participation of many healthcare workers and helped them acquire hands-on knowledge.

Most of the challenges faced were service-related. The supply of glucose testing strips was unsustainable, and this affected screening for diabetes. The project did not have a community engagement component and, therefore, could not trace persons who failed to return to the health facilities for fasting blood glucose testing, making the attrition rate high. Some of the healthcare

facilities did not have diabetes mellitus services at the start of the project and there was no linkage with tertiary hospitals for specialist services.

These limitations may have undermined screening for diabetes mellitus in the healthcare facilities. Some clients may have been misdiagnosed with diabetes because tests were done only at the time of TB registration and not at the end of TB treatment. The lack of glycosylated haemoglobin tests, which are



Screening of persons with TB for diabetes mellitus in routine programme settings is feasible in places like Uganda where TB epidemic is very high.

John Paul Dongo



usually less influenced by infection, may have affected the accuracy of results.

In conclusion, the project found that the prevalence of diabetes mellitus in persons with TB was higher than in the general population in Uganda. Screening of persons with TB for diabetes mellitus in routine programme settings is feasible in places like Uganda where TB epidemic is very high.

4. Panel Discussion

Question: *As head of the WHO Global TB programme, who sets the norms, policies for TB and nutrition, tell us about your perspective about TB and nutrition.*

Tereza Kasaeva, WHO Global TB Programme

Unfortunately, based on our latest global TB report, for the first time in over a decade, TB deaths are increasing, and this is a concerning trend. Of course, the main reason is the impact of COVID-19 and the disruption of essential TB services. Based on our modelling, we are further predicting an increase in TB-related deaths and TB incidents in 2021/2022 unless urgent measures are taken. This worsening situation will be driven also by the socio-economic impact of COVID-19. And we can see it already because TB is a clear example of a disease driven heavily by social determinants. The increasing rates of poverty and undernutrition will influence and are already influencing the global and country tuberculosis situations. The linkages between TB and the top five social determinants are well known – undernutrition, diabetes, HIV, poverty, smoking, and alcohol use. We have evidence about this in the global TB report.

Almost 20% of the global TB-related incidents are due to undernutrition. Dr Bhargava presented evidence from their latest trial that undernutrition is not only a risk factor, but also that malnutrition significantly worsens treatment outcomes and increases TB related deaths if not addressed appropriately. As indicated in the TB strategy, pillar one clearly shows that the best approach would be integrated patient-centred TB care and prevention. We have guidelines that we are operating regularly. The [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) were developed in 2013, and there is another one developed by the WHO Department of Nutrition in 2019, which includes specific recommendations for TB to become an essential part of care, including for younger children. We have new tools such as the multisectoral accountability framework, and social protection and nutrition support is a part of this framework. Also, I would like to refer to the top 10 recommendations of the 2020 United Nations Secretary-General (UNSG) report, which highlights the importance of nutrition support.

I remember from my personal experience, in the early days of my professional career as a doctor, one of the basic principles shared with us was that before commencing treatment, you should provide nutrition support to your patients. And this is fundamental. I would like to also give another example from history. After the Second World War, one of the first decrees released by the Russian Government one month after the war was to provide nutrition support for patients with tuberculosis. And you can imagine that at that time, there were many issues. The country was in ruins, but there was understanding that nutrition support for people with TB is essential to avoid outbreaks and pandemics in the country. So, we should come back to this level of understanding. At WHO we will continue to do our best and I'm using this opportunity to request Dr Bhargava and other colleagues to share with us

all the data, of course, we will use them to update our guidelines regularly. However, guidelines themselves without uptake will not work, providing treatment is critical.

When we discuss other communicable diseases like HIV and malaria, we consider prevention measures, like the distribution of anti-mosquito nets and procurement of condoms, as essential, but in the case of TB, we are not considering nutrition support as essential measure. We should unanimously come to this point once again, highlighting that TB is a very complex disease and without comprehensive and broader measures, we will not be able, especially in the current situation, to address it effectively.



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Tereza Kasaeva



Question: *Having lived with TB, tell us your perspective about TB and nutrition, especially focusing on your learnings from that experience.*

Ingrid Schoeman, TB Proof, South Africa

In 2012, TB nearly killed me. I was working as a dietitian in public hospitals in South Africa and I thoroughly enjoyed my job. But then I became very sick and was admitted in the intensive care unit (ICU). A doctor diagnosed me with XDR TB through a lung biopsy and I was moved into the isolation room, and they started me on TB treatment, but the treatment side-effects was so toxic that I developed liver failure and I went into a coma. I deteriorated very quickly, and the doctor phoned my family in Pretoria to get on the next flight to come and say goodbye to me. Fortunately, after a couple of days, I woke up from the coma. But my entire world had changed. I went from being a dietitian to being a patient and from being free to completely bedridden. I had lost 30% of my body weight and my stomach was swollen from the liver failure. I was unable to eat despite having an abdominal tap to drain some of the fluid. So, the doctor inserted a tube, a nasal gastric tube, in my nose to feed me through it. I was vomiting, I was having diarrhoea everyday, I was so weak I couldn't sit in bed, and I really hated being bedridden. It was a horrible experience. I, in fact, I didn't recognize the person who I became. I was in hospital for 75 days, of which I was in ICU for one month or more. I received excellent clinical

care and kindness from the health workers. My friends and family visited and supported me. I had job security; I didn't have financial stress. Yet, I wanted to give up, I felt completely overwhelmed.

This experience was very hard, and it gave me a better understanding of what the majority of people in South Africa experience. We don't even have food on the table to eat. To be honest with you, I don't think I would have survived had I also been faced with malnutrition, food insecurity, or hunger. Studies in South Africa found that about half of patients were malnourished and suffered from anaemia. Low albumin, low haemoglobin, and micronutrient deficiencies like vitamin A increase your risk for developing TB. Food insecurity in KwaZulu Natal Province in South Africa was three times higher for people with drug-resistant TB than for the general population, and people with drug-resistant TB in South Africa qualify for nutritional supplementation. However, amidst COVID-19, applications for social support grants were unpaid, leaving people hungry, and often hopeless.

We heard from Dr Kasaeva that TB deaths increased. In South Africa last year, we lost 61,000 people and it means an unacceptable human cost caused by a curable and preventable disease. The National Strategic Plan targets to eliminate poverty and reduce inequality will not be achieved if the poorest 40% of our population continues to carry 65% of the TB burden. Therefore, political commitment is needed to prevent malnutrition. We need to assess people's nutritional status and refer them for nutritional support. We need to consider that these people have no food often at home or an income to buy food. So even nutritional supplements that are provided must be shared between household members.

Food parcels are not enough, each person should receive high-quality TB care, free from stigma and discrimination. This package includes adequate counselling to help people overcome other challenges such as stigma. For example, when people lose weight and worry for being gossiped about because their physical appearance had changed. There is this association with HIV that people fear. As a communication expert recently explained to me, we need to talk about things that matter to individuals instead of these blanket approaches that do not fit their needs, their worries, or their concerns. Community health workers provide this kind of support at household level, where they are known and trusted, but they need to be supported. Therefore, there is a need for the government to empower community health workers adequately, give them personal protective and infection prevention equipment, and give adequate remuneration.

We have an opportunity to leverage the COVID-19 response to strengthen TB response. TB recovery plans need to be implemented urgently. Each time we speak about COVID-19 let us also raise awareness about TB, as both are airborne diseases, to give people hope that TB is preventable, curable and can happen to anyone.

Question: Michael, from your perspective and the perspective of the World Food Program, tell us about TB and nutrition.

Michael Smith, World Food Programme

There is, in my opinion, totally unacceptable failure to support the whole person and not just treat the TB disease. To help people meet their essential needs and help them cope with risks and shocks. For me this is what WFP's role in a global TB response is all about. We need an understanding of the crucial

elements of food security and nutrition, harnessing some of the platforms and tools that WFP has at its disposal and working very closely with key partners like WHO and others to have a multisectoral, multistakeholder approach. In all the 30 high TB countries, undernutrition is a leading factor. We have the peer reviewed evidence, the anecdotal, and evidence from partners. It's becoming an old story and I don't know if we are not saying it the right way, if we are not saying it loud enough that making people food secure and addressing malnutrition are things that we can do well, and we know how to do, but we're just not doing it. It's unfortunate.

From WFP perspective, the work that we do to support the most vulnerable and people living with TB is not rocket science. It's nothing special. We take a two-pronged approach, we focus on addressing and supporting the individual client, usually through nutrition support. And we provide a lot of mitigation and safety net support to households, because it's not just about dealing with TB as a disease, but about supporting the household. The fact that many people have lost livelihoods, they have lost incomes, they are food insecure, they are making the choice between having to eat and to go to a medical appointment. That's totally unacceptable in my opinion. We take a two-pronged approach where we try to get a handle on the malnutrition status of the client, first and foremost, and provide them with nutrition support, counselling support, and other follow-up services to get them healthy. We know that food security and nutrition are prerequisites to a healthy and full life, and then that other support around the household. Many times it is in the form of in-kind transfers, cash-based transfers, outreach support, where you're trying to mitigate, soften and mollify the impact of disease from the social and economic perspectives.

We have found that in the last two years, our programming on TB and of course on HIV has taken a very sharp focus on the social and economic support because of the COVID-19 situation. Now we're dealing in a context where people are not just dealing with TB, they are not just dealing with HIV, we are in a syndemic world, we are living with COVID-19. The presentations talked about other comorbidities like diabetes; people are suffering from mental health. Therefore, the approach and the support need to be structured from a people-centred perspective. These layered health challenges that people are stacking on top of each other, and they are compounding. Giving treatment for TB is just one part of the solution, we need to provide support to the



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Michael Smith



entire individual and to the family. That's one huge element, obviously, of what we do tackling TB.

The other side that needs to be discussed is the technical, political and governmental influence that could be leveraged, especially by UN agencies. That focuses a lot on providing technical support to governments to help them revise national policies and plans, leveraging a lot of the existing tools that WFP already has at its disposal around rapid assessments and vulnerability

assessments because then you can bring those reports to key stakeholders and tell them their programmes are inadequate, and that the social protection platforms need to be expanded and adapted. Telling them that they need to expand vertically and horizontally. We must have that evidence and technical expertise to show key stakeholders that more needs to be done.

A key follow-up action that WFP has been successful in is revising the national policies and strategies around nutrition and TB, and passing those policy platforms back to the national level because that's where you will have the most kind of bang for your work, that's where you will have the reliability and the confidence of government to provide the support services to people who are most vulnerable.

In summary, we must continually remind people of how crucial food security and nutrition are. We have many tools and platforms, and many solutions. We need to be better about articulating what we can do individually, and we need to be harnessing those skills and expertise collectively for a truly multistakeholder, multisectoral response that looks at the global TB response beyond just treating the disease but supporting the entire individual and household.

Question: *Eliud Wandwalo, what is your perspective of TB and nutrition?*

Eliud Wandwalo, Global Fund for AIDS, Tuberculosis and Malaria

For us at the Global Fund, this has been a very important area of support; we have been supporting countries especially through what we call enablers. Most of the countries have been requesting the enabler as part of their funding request, and this has been one of the core components of the TB funding request and support. We conducted some review some years back and found that about 80% of all the TB support goes into the enablers. And most of these enablers go to support nutrition. They are requested in the context of improving TB treatment adherence as part of the pro-poor approach in poverty alleviation, and in the HIV context.



“The other aspect we need to focus on is education of patients, and the community in general, on the importance of nutrition. This could be incorporated into our funding approach.”

Eliud Wandwalo



When we look at the issue around nutrition support, we found in most of the funding requests submitted to us that many countries prioritize drug-resistant tuberculosis patients and vulnerable key population, like people who use drugs, pregnant women, and children. These are the main groups prioritized for nutrition support in most of the programmes we have been supporting. Most of these programmes are run by international or local NGOs. In many countries, the support is provided either directly to the patients through cash transfers or through food packages.

We are facing some challenges with this aspect of the support. First, it is very difficult to operationalize food support, especially to patients, because of the management and logistics required and the difficulty in monitoring to ensure that the support reaches the target groups. The other challenge is the sustainability of this type of support. We have seen some countries where we provided support and it was later taken over by the government.

Going forward, we need to examine how to make this activity more sustainable. How can we integrate nutritional support to patients as part of the general support or as part of the support through the government system? This is critical. Whenever we have this kind of component and it goes to our technical review panel, these are the kinds of comments we receive. They want to see the sustainability of this type of approach and its operationalization. We have a challenge regarding who to document the impact of this kind of support. It is very difficult to get the right indicators to document the impact of this. There have been some studies which show the impact, especially on treatment outcomes, but they are not conclusive. This is an area we need clarity in terms of what the impact is.

The other aspect we need to focus on is education of patients, and the community in general, on the importance of nutrition. This could be incorporated into our funding approach. If we also want to focus on the risk factors for tuberculosis, it is part of providing a comprehensive package. This needs to be included in the in the package of care for TB patients. We need to work with health workers, to educate them on the importance of nutrition, the importance of assessing patients for nutrition status and how to lead them to the appropriate support mechanism.

The Global Fund is now in the process of starting to operationalize its next strategy and it would be important to highlight this, and how the Global Fund could further support in this area, making sure that it is part of the TB supports package.

Question: *Anurag Bhargava, you presented a very convincing data from your project, linking TB to nutrition, and this whole aspect of thinking about nutrition as a vaccine for TB. At this time everybody is worried about vaccine for COVID-19 and that's a very interesting concept. If you were to go forward, tell us what next steps you would recommend regarding nutrition.*

Anurag Bhargava

As a global leader in TB discourse, the WHO has developed a comprehensive end TB strategy, which for the first time has introduced words in the TB lexicon that were missing in earlier strategies. Talk of patient-centred care, which is responsive to the values, expectations and needs of patients, we talk of bold policies and actions on social determinants that drive TB incidents. The first pillar is integrated

patient-centred care and the data from India shows clearly that we have unacceptable levels and severity of undernutrition in patients, which contributes to mortality. I would again emphasize that much of the mortality in TB patients in India and across the world occurs in the early phase. Many of the therapeutic side effects occur in the first two months. During this phase we see patients who die early, and such death is clearly linked to their BMI and their performance. We suggest that the WHO recommendation be followed for the assessment of all TB patients irrespective of whether they are drug-resistant or drug-susceptible. In this way there will be a risk stratification.

TB remains the only killer disease for which people are not assessed for severity at baseline. In COVID-19 we assess severity at baseline and conduct appropriate triage, but in TB for some reason, we are assessing patients for sputa status, looking at HIV, diabetes, and comorbidities. Otherwise, it is left to the judgment of the physician to send them home if they are in a situation that they cannot survive the initial few weeks of therapy. Nutritional assessment will help us identify patients who are particularly ill. The 2013 [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) recommends that all patients with BMI less than 16 should be treated according to the guidelines for adult malnutrition. The 1991 [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) recommends admitting all such patients in the hospital for inpatient care, which poses a logistical issue for people. In India we have a more nuanced approach to this. There are other issues, for example, if a person has unstable vital signs, very poor performance status, then they should be admitted. Nutritional assessment will help in risk stratification and help identify people who are likely to die early. Such patients may require inpatient care and closer follow-up, and the message should go out to the field workers that the patient needs more than routine assessment.

Another point is, we must evolve. The 2013 [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) is a very good first step, but we must build on this guideline and revise it so that the uncertainty around what is the optimal mix, what is the optimal calorie intake, protein intake, and what is the optimal content of a food basket, for example, can be decided. From our experience, nutrition support must be graded according to the local context and the clinical situation. There can be a one size fits all food basket but graded according to the patient's clinical condition. For example, the patient that I showed in my slide had gained 16 kg at the end of six months but still less than 18.5 BMI. Many of these patients will probably require additional support for a few more months. And we should look at that as a form of therapy.

The technical component will have to be in place, and all our field staff should be trained in the use of the nutrition assessment tools for the care of patients with undernutrition, and the health systems we send them should consider this. That is one next step that I feel as part of patient-centred care. Nutrition support should be considered as an essential, not an optional, component and we must operationalize this in all our programmes. Before we do that, we can do a very quick situation analysis in all our TB programmes of what is the prevalence of undernutrition in our patients. We already know the prevalence of diabetes. This will help contextualize the guidelines, so we don't have a guideline that is not applicable.

We need the involvement of the nutrition community in the next steps. We need people to inform us about the content of the food baskets. The food intervention should be scalable, sustainable and culturally acceptable, something that can be decentralized in its procurement and distribution. For

example, food basket along with multivitamins is much more scalable and sustainable than a centralized production of some ready-to-use therapeutic food (RTF). There are ongoing trials of RTF in India in a limited way. However, for the larger programme, especially in the situation that we are currently, food baskets are probably a better, more sustainable, and more scalable option. The nutrition community, historically, has been concentrating on maternal and child nutrition.



“Patients with TB can take the drugs on an empty stomach, but their stomach should not be empty thereafter.”

Anurag Bhargava



Overall, there should be a change in focus to adult nutrition, particularly of men. We have seen in our trial that there is no real difference in the weight class that men and women undergo because of TB. We need some nutritional assessments and nutritional surveillance. We have five-yearly programmes, but I think this should be an annual exercise, particularly among vulnerable populations. As Dr Kasaeva pointed out, in the era of COVID-19 pandemic and climate change, food insecurity and worsening undernutrition can lead to a spike. We saw in the 2008 crisis in Zimbabwe that TB incidents spiked immediately and when measures were taken, the spike came down. This happened in Cuba in the 1990s also. There is robust evidence that we need to respond to the changing situation of food availability and malnutrition in the community. For this we need a nutrition surveillance programme, which we can do with the nutrition community. We must not leave the men and adults out of the whole discourse, because for some reason we don't completely understand, men are more malleable to TB and suffer higher mortality than women.

The association between TB and nutrition is a vast under-researched area. We need to document these associations, whether causal or not. This is a rich area of clinical operational and public health research waiting to be conducted and these should happen concurrently. We should not wait for evidence before we decide our next steps. As Dr Bradford Hill said science is always evolving, evidence is always incomplete. I would say that there is a crisis; patients with TB can take the drugs on an empty stomach but their stomach should not be empty thereafter.

Question: *John Paul Dongo, you presented very nicely about the link between diabetes and TB and the findings of your work in this area. What would you recommend as the next steps?*

John Paul Dongo

Most of my recommendations regarding TB and nutrition would go into integrating activities within the healthcare facilities and at the community level. When you look at most of the healthcare systems, we have many barriers that hinder the continuum of care. One of my recommendations, if we are to

integrate these two programmes running concurrently, we need to do a lot of work to address some of the service-related barriers to additional screening and management of patients within our communities. Secondly, at the level of the community, we know that there are community-related interventions that happen, particularly for TB, we have contact tracing and investigation. The other recommendation I would make, therefore, is to support integration of household TB contact tracing with nutritional screening and assessment. Thirdly, we need to foster and support the collaboration of both TB and nutritional programmes at the Ministry of Health with the involvement of other stakeholders to promote successful integration of TB and undernutrition. And finally, at the level of the Ministry of Health, there is need to establish national-level TB and nutrition guidelines and policies that support and promote integration of the interventions.

Question: *Tereza, what are your thoughts on the next steps.*

Tereza Kasaeva

First, as representative of the leading technical agency, I should reaffirm that we will continue our work on updating standards, guidelines and policies. There are research questions to which we should respond and as soon as possible. We have clear plans for the release this year of new guidelines on social protection for people with TB. We are planning to update our latest evidence and our guidance on nutrition for people with TB. We are planning to release a guidance and best practices document for the multisectoral accountability framework, adaptation and implementation. We would like to encourage you to be actively involved in different studies, operational research activities, and share with us all available data to strengthen our global guidance. At the same time, I would like to repeat that the status of the uptake of recently updated guidelines for TB diagnosis and TB treatment is very slow. We are recommending based on strong evidence, faster, more effective new drug, a fully oral treatment, what then are the reasons for non-uptake. The treatment and diagnostics coverage, with the WHO recommended tests is only 30%. The guidelines will be there, but we should all do our best to provide updates.

We need to elevate these commitments and knowledge to the highest level of decisionmakers. At the first ever high-level meeting on TB in 2018, heads of state made very bold commitments and agreed to do the best for people with HIV, but we are far behind these targets. One of the requests was to provide adaptation and implementation of multisectoral accountability framework, which includes also clear responsibility and accountability for different sectors and stakeholders for the TB response. We are monitoring the situation, working closely with the WFP and other UN agencies at the global level. We know that they are working at country level, but this work should be strengthened. We need strong advocacy; we should hold these decisionmakers accountable.

The criteria for our effectiveness should be measured not by the number of guidelines, webinars and even meetings, though they are very important, but by the actions implemented in the countries, related to the social protection packages, cash transfer and food packages. We should all try to monitor and report these together. This is extremely important. And I can give you one quick example. When I visited one of the countries with the highest prevalence of TB and asked the representative of the Ministry of Social Protection how the vulnerable group should be reflected on their platform, they were laughing. They were not considering people with TB as a vulnerable group. This means that there were

inadequate social protection measures, including nutrition support, for them. There is a lot of work before us, and we can't give up despite all the challenges. So, let's continue working together.

Suvanand Sahu

Also reminding us about the UN HLM 2023 which comes as an opportunity we must not miss. We conducted some review of the political declaration of 2018. There is a paragraph that talks about nutrition and TB, so, there is already a commitment there. But we need to see this in 2023 to take it forward and make it stronger.

Question: *So, Ingrid, any next steps from your side?*

Ingrid Schoeman

Yeah, just want to echo what you said. So, Tereza, it's great to hear that the updated social protection guidelines will be out soon. Other things that we were thinking about is that each country's ministry of health can call for person-centred mechanisms of action, to support local communities in accessing health care and social support. We have seen for the TB response that we urgently need to strengthen the health system, including supporting and protecting health workers, but also putting communities first. We have seen that local community leaders or local TB champions are key to successful advocacy campaigns. Therefore, dietitians, nutritionists and health workers must work closely with these community leaders to implement faith-based aids.

In terms of nutrition and education, we need to develop context-appropriate messages on nutrition. If I can just give a quick example from South Africa, we learned through working with community health workers that traditional ways of messaging, for instance, me sharing my story as a TB survivor, wasn't interesting to people. They wanted lively participatory theatre plays to share information. If we want to bring change and carry communities along, we need to pause and reflect how important local community leaders are in achieving any of the SDGs or commitments made at the HLM on TB.

Providing communities with scientific evidence and accurate information is only useful if it is framed by people's experiences. We need to rethink how we can integrate people's experiences with storytelling to engage communities on important facts about nutrition and TB. I would like to end with the most important point from our perspective. Inequality is the driving force of poor health and this needs to be addressed with adequate resources and political prioritization. COVID-19 showed us what could be done to respond to emergencies backed by the political world and strong leadership. Now we believe that SDG 2 can be achieved, and civil society wants to work with political leaders to end hunger, achieve food security, and improve nutrition in all our communities.

Question: *Michael, do you have any next steps to recommend?*

Michael Smith

During the session, I looked through a few private comments that were directed to me on why we are still not able to move the needle after all our efforts. The way forward is, as Tereza said, to keep doing what we are doing. There's always going to be a case where urgent specialized nutrition supplementation is needed for malnourished clients. I don't think you can move away from the fact that we are operating in a growing number of emergencies in the humanitarian context. Where there

is food insecurity, where there is poverty, there's going to be a need to support the individual, but I think forums like this, working closely with WHO, having this multisectoral approach is a very strong way forward.

Another kind of understanding the global TB community needs to confront is the fact, and it's quite similar for the global HIV community, that, frankly, interest in funding and supporting a single disease programme is waning. Financially and politically, we have been shoved into the corner from COVID-19, and kind of relegated to a second tier and we are having difficulty finding the space and time to influence people that really matter. For both HIV and TB, we have new political declarations, we have new strategies, new approaches, that's a huge start, and that's a way to show a concerted kind of uniform global response.

We need to be harnessing the platform that COVID-19 has given us. One key programmatic and policy area that has more financial and political support than ever before is social protection. Over 3000 kinds of platforms, programmes and instruments have been launched on social protection under COVID-19. Spending on social protection is higher than it has ever been since World War II. The World Bank has come out with, I'm not sure, it must be 19-20 different versions of a living paper on social protection platforms that have been developed and rolled out and changed during COVID-19. Our response and working with key partners should focus on reaching across the aisle. We must speak the language of social protection practitioners and elicit interest of the social protection sectors to support TB, HIV and health in general, because I think that's where we are going to get momentum.

It goes back to this point that many of my fellow panellists have talked about; the need to inform, revise and validate national plans and policies working closely with national actors, and ministries of health, because that's where we are going to get long-term, sustainable support as Eliud said earlier. It's a multi-pronged, multifaceted way forward. We keep doing what we are doing and do them a little bit better and a little bit more broadly. Changing our lexicon a little bit, moving beyond very specific TB lens, continuing to reach across the aisle to other partners, and doing everything that we can to support national governments have plans, policies and protocols to support the most vulnerable.

Question: *Eliud you already said a few things about next steps. Would you like to add anything?*

Eliud Wandwalo

First, I'd like to echo what Michael just said, that the issue of nutrition, as it relates to tuberculosis, and of course, with other diseases is not yet discussed well. It is tackled on the margins. We need to have more discussions; we need to bring this to the core of TB prevention and treatment. That is number one. Number two, we should not approach this in silo, we need to approach it as part of the social protection programme, in an integrated way. We cannot get traction if this is approached purely from the TB angle. We need to look at how we frame it from the TB point of view and be able to speak the language of other people, of social protection people in an integrated way. From us at the Global Fund, we need to look at the issue of sustainability, the issue of operationalization of these programmes, because this has been one of the challenges. So far, what I have seen from the funding requests is that it has been approached as a way to improve TB treatment outcomes. It is far bigger and beyond TB treatment outcome, it is a prevention issue, and we should frame it that way. We must look at it as a

package of comprehensive TB package, of prevention and quality of care. From the Global Fund, these are the important developments for next year and 2023. First, we will be working on our replenishment from next year, we will be working on the tools for the next funding cycle, and we need to see how we frame this in all those tools that will be distributed by the Global Fund, ranging from the information note, funding request, modular framework, etc. Also, we are working on operationalization of our next strategy and there are some statements regarding this. We need to unpack that and see what it means for countries, for our funding, and for our programming.

Question: *As the title of this side event says, undernutrition causes 20% of TB cases, this is true, and this figure should be recognized. This side event discusses undernutrition, overnutrition and TB. I am interested in the figure, is there any quantitative analysis for the other side of TB?*

Suvanand Sahu

There are some quantitative assessments on the diabetes side. If you add them together, you are making a good point that it is a much bigger figure than 20%. And I must also say that in countries, this varies. In some countries, it could be higher than 20%, and in some it is less. I would request anybody from the panel to respond to that question of the rest of the nutrition, what percentage it contributes to TB.

Anurag Bhargava

The global TB report 2020 has these figures in exact numbers. Out of the 10 million cases of TB, they had attributed 2.2 million cases to undernutrition. And the combined proportion due to diabetes, HIV and alcohol use disorder is less than that. Diabetes is only about 5-7% of global TB incidents, about 350,000 cases. The other confounding variable is that people who are obese are somewhat protected against TB incidents. We know the figures for the other risk factors and that is where undernutrition is leading the risk factors in TB incidents. As Dr Sahu said, the figures may be higher. We are working on a manuscript that we have just submitted where the proportion of TB cases attributed to undernutrition will be higher. There are some issues with the WHO estimations which we will point out, but this may be the subject of discussion in a few months. The risk ratio for TB is also probably higher than what we had assumed, and the prevalence of undernourishment, which is based on FAO figures, is lower than the prevalence of low BMI. Therefore, the figure will be 10 percentage points higher.

Lucica Ditiu

It is very great and educational; we have learned so much. There is so much to do. I want to reemphasize something that was mentioned, that when we plan for a TB response it must be a comprehensive package. Due to the lack of financing, chronically, there is a tendency for programmes to budget for things that are more likely to be funded. When we make a comprehensive package for all TB, for all people that are affected by TB, and we include all these, nutrition and all the others, the budgets will become very high. There is a fear that it will look too high, like a pie in the sky, and then nobody will fund it. Nobody will fund unless we speak about it. We should not be worried or afraid or ashamed that we are speaking on behalf of those who are sick, we should not refrain from preparing budgets that include everything that is needed for a person. And yes, the budgets will be crazy high, but you know some countries did that and that increased their budgets. We know about India, starting a few years ago doing the budget of what is required to end TB. The budgets doubled what was available and even

beyond that, I think tripled. Indonesia recently tripled their budget, which of course is not yet where it should be, but it's growing. Therefore, including this kind of interventions and expanding the cross-collaboration will be extremely important. But if we don't speak, or if we don't have it there, like facing the decisionmakers and raising it for them, we will never be able to fundraise enough. We speak at the global level about the needs of programmes to end TB of 13, 14, even higher, 15 billion dollars a year. And then we observed that several programmes were seeing not even half of what should be. And that is not a criticism, I fully understand that my country still works like that. You feel worried to say, oh, I need US\$300 million, when you know that the government will give you 50. And you are like, how can I go ahead and make robust budgets that address all these components. I am prioritizing just some parts because prevention is too much, or communities is too much, or nutrition is like oh my god, these people with nutrition come on top of everything. Without putting all these things and discussing, of course, with the ones who are responsible for these areas of work as we are doing here, we will not be able to have a clearer picture of what is needed. Will it be heart-breaking? Yes. Will it be upsetting? Yes. Will we have the money right away? No. But without flagging it and expressing it, there will be nobody from the Ministry of Finance to think for the TB programme or about nutrition. If there is anything, things will be more even hidden. So, we need to rise and say, listen, we are having these jobs to speak for people with TB so they can be cured, and for us to enter TB, we need all these things in place, you are giving us a third of the money, fine, we will fight to get more. And we will try to do the best we get with the third. But you decisionmakers, you funders be aware that two-thirds of the money is a gap. And don't expect me to reach the end of the TB with one-third of the money because I cannot do it, and that's why I want to ask you all the money. This is why I think it's good to have this discussion and perspective and I am learning so much, I have written almost half of a notebook just to see how behind I am on all the knowledge that you are sharing here. So, thank you very much.

Anurag Bhargava

I could not agree more with what Dr Ditiu said. When it comes to budget, I must say that we should not ask for something which is TB-specific. TB has a bidirectional relationship with, I would say, the health system and the social protection programmes. Therefore, much of the programme, or budgeting should not be considered as TB-specific, but to address the needs of the people. For example, nutrition budget could go to TB/HIV as well. India has one of the largest complementary nutrition programmes in the world, which has a large public distribution system, but which lacks quality protein. Presently, we have midday meal programme to feed millions of children hot cooked meal every day. And we have an integrated child development service where combinations are given to pregnant mothers and children below three years. There is a platform that if we articulate the need for this specific programming, it will be taken up. I will give two examples. The TB programme struggled with setting up PCRs for so many years for TB diagnosis, but in COVID-19 time it was upscaled in no time because it was perceived to be an emergency. Similarly, I'll compare the national programme budget of TB in India in the 1980s, which was half a million dollars a year for 2 million people with TB, whereas the TB programme in New York used US\$1 billion to treat 2000 patients. So there has been a real lack of the recognition that we have these other needs. We need to speak with a single voice and hold discussions, as we said, reaching out across the aisle. I would say that when we talk of multisectoral frameworks, it all looks very complicated. However, if the strategy is flexible, we can hold decentralized talks with stakeholders in the community, these are the places where integrated solutions are very easy to find. Whatever is done should not be top-down, one size fits all, but community-based and decentralized with flexibility built into the structure.

5. Closing

Hajime Inoue, Ministry of Health, Labour and Welfare, Japan

As a participant from the host country for the Tokyo Nutrition for Growth Summit 2021, I appreciate all the participants of this side event. It has been a great learning process for everybody. I especially thank the Stop TB Partnership for convening the event just one day before the opening of the subcommittee. There are 120 participants listening to this event right now, I assume majority of them are from the TB community, so all of us share the same idea regarding the current situation. What is the linkage between TB and nutrition? We have exchanged ideas about next steps. This is a great side event, but I think this is not enough. The important next step is to connect our shared understanding and shared ideas within the TB community with the rest of the world, with the public, and especially with political leaders. This is the reason in my understanding that Lucica and Stop TB Partnership selected this timing, just one day before the start of the summit. It's important for us to connect our important discussion to the mainstream summit meeting in the coming two days. I, as a person from the host country, and as a person living in Tokyo, have a goal to connect and hold the discussion in the past two hours in the mainstream summit meeting. I am very happy to do that work. Thank you very much.



“This is a great side event, but I think this is not enough. The important next step is to connect our shared understanding and shared ideas within the TB community with the rest of the world, with the public, and especially with political leaders.”

Hajime Inoue



Suvanand Sahu

Thank you, Minister Inoue, and thank you for your wise words about connecting to the rest of the world. And thank you for committing to do part of that in the mainstream conference. Before we conclude, just a few points that came out in the discussion, although it will be difficult to summarize such a rich discussion.

Some of the things very clearly articulated relate to advocacy. We need to let the world know more about this, we need to let the nutrition stakeholders and others know about the connection between nutrition and TB. Therefore, a lot of work needs to be done in that direction. Some important opportunities are coming during the World TB Day next year, the UN HLM after that, the G20 leadership, and others. So, there are some opportunities.

Second, I noticed many people presented or called for more evidence. We heard from Tereza that more guidelines are coming. That's another piece of work that we should keep following up, more evidence and more guidelines on nutrition and TB.

Third, we heard many things about how to scale-up some activities and about assessments. How do we scale-up programmatically to reach everybody with TB who needs nutrition? We need to think about nutrition not as a luxury and not as an option, but as an essential part of TB response. How do we do this? There were many thoughts in this area, but something that cuts across is the idea of a multisectoral outreach across the aisle to other stakeholders, not just TB stakeholders. It is very good to have some stakeholders from the non-TB sector in this meeting. I see in the audience some people who we don't usually meet in TB meetings.

Two important things for two different communities, TB and nutrition must be integrated. Besides that, there was a very clear message for the TB community to take nutrition as part and parcel of the TB comprehensive response. How do we do that? How do we plan that? How do we get it funded? Eliud in his comment spoke about the Global Fund possibilities, domestic financing and other related issues. The TB community must take nutrition as part of the TB response by not just focusing on people who already have TB, they must focus also on prevention, as Anurag said, they should see nutrition as vaccine for TB.

There are some messages to the TB community to take issue of nutrition beyond maternal and child health and emergency situations and include the men and adults. We also spoke about presenting TB and nutrition issues for discussion, commitments and action at high-level events and meetings. It is important for us not to carry out these activities sequentially but simultaneously to get the desired results.

The Stop TB Partnership is committed to taking this agenda forward with partners in all the streams. Thank you all for joining this meeting and for contributing to the rich discussion.

6. Action Points

The key action points from the meeting are as follows:

- a. Integrate TB and nutrition as part of a package of high-quality comprehensive care and make nutrition an essential TB prevention.
- b. Implement TB treatment as an integrated patient-centred care within healthcare system and social protection programmes that provide support to individuals and their families, including counselling, nutrition support, social protection, and prevention of stigma and discrimination.
- c. Assess all TB patients at baseline (including nutritional assessment) using the [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#), irrespective of whether they are drug-resistant or drug-susceptible, to enable risk stratification and identification of patients who are ill.
- d. Scale-up nutrition and TB activities programmatically to reach individuals who need TB and nutrition interventions.
- e. Conduct advocacy and multisectoral outreaches and awareness among TB and non-TB stakeholders about the connection between nutrition and TB, including presenting TB and nutrition issues for discussion at high-level decision-making events to secure the needed political commitments and actions.
- f. Foster multistakeholder partnerships, with the involvement of the nutrition community, to boost TB care and treatment as well as to strengthen integration and enhance sustainability of TB and nutrition programmes within the general support system of governments.
- g. Support countries in revising their national nutrition and TB policies and strategies to make them current and more applicable to local context.
- h. Facilitate research, annual nutritional assessments and nutritional surveillance to provide evidence for advocacy and for strengthening TB and nutrition integration.
- i. Revise and update the current [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#) and develop new guidelines as necessary.
- j. Encourage and facilitate uptake and use of the [WHO Guideline on Nutritional Care and Support for Patients with Tuberculosis](#), including training field staff in the use of the guidelines and other tools.
- k. Take the issue of nutrition beyond maternal and child health and emergency by including the men and adults in nutrition programming.
- l. Empower community health workers adequately so they can support care at the household and community, including providing everything they need to carry out their assignments such as personal protective and infection prevention and control equipment.
- m. Support education of patients, the community (including community and religious leaders) and community workers on the importance of nutrition and assessment of patients for nutrition status, and how to link TB patients to appropriate support mechanism.
- n. Harness the platform and opportunities that COVID-19 has created to strengthen TB response.

Annexes

Annex 1: Meeting Chats

The following are relevant chats from the meeting chat box:

- I would like to invite those interested in advocating for action on undernutrition to help eliminate TB to join the Union Nutrition-TB Working Group.
- Yes, an effective TB vaccine is available in the corner shops everywhere, what is required is to make it accessible to the people.
- Malnutrition will become the first social determinant for TB patients. It causes poor outcome and death. This is the time to advocate for nutrition support if we must reach one of the SDG indicators on mortality.
- GLRA in Nigeria conducted a pilot study on screening TB patients for diabetes mellitus and prevalence among TB patient was 9.4% and among them 5.5% were newly diagnosed of TB. GLRA Nigeria also found in 2020 prevalence of TB among diabetics of 800/100,000 population. We have now included routine screening of diabetes mellitus patients in the TB national support programme.
- Not only children with severe acute malnutrition, Ready to Use Therapeutic Food (RUTF) has been used for HIV patients in some research.
- Deeply value your contribution for this study highlighting the obvious relationship between TB and undernutrition. I sincerely hope urgent, comprehensive intervention related to nutrition are made.
- Thank you for your sharing the study showing the relationship of TB and diabetes and the challenges. With India being diabetes capital, implications are obviously serious regarding access to diagnostics, monitoring and management.
- I have understood that undernutrition is the highly influencing underlying cause for conversion of infections into diseases in almost all communicable diseases whether it is measles, diarrhoea, pneumonia, etc. I wish to know if there is more specific link between TB and undernutrition which is different than other communicable diseases?
- What are the logistic challenges in providing the necessary nutritional supplements to people with TB in the trial? What are the challenges to scale-up the intervention, nutritional assessment and supplementation, by TB programmes?
- The way visible undernutrition feeds stigma and how that impacts quality of life cannot be captured by systematic reviews.
- It would be appreciated if anyone could share global nutritional assessment tools for the identification of malnutrition and nutritional risks associated with TB? Do you have harmonized tools?
- This is Afreen from Savera Foundation which works in Giridh and Koderma districts of Jhrakhand, India. We have been working with TB patients for the last one year and have identified a total of 31 TB patients. Out of them only 10 are taking treatments. The areas where we work in are mica mining areas and people depend on it for their survival. Malnutrition is very high in these areas given the

socio-economic conditions of the people. The lack of proper healthcare facilities at the primary healthcare centres is another reason for the high prevalence of TB in these villages. Our intervention has been identifying the patients, providing them nutrition supplement, delivering medicines, and having regular follow-up with them. We have some limitations given that we are a non-health NGO and we lack the medical expertise and resources to fully help patients suffering from TB.

- Any special relation between anaemia and response to anti-TB treatment? Would addition of haematinic, to dietary supplementation hasten/improve recovery from TB? Have you or anybody else examined this?
- I think all we need is a height and weight scale. Can even use mid-upper arm circumference, particularly for children and pregnant women. As the huge Sudfield et al. vitamin D trial showed us, focusing on one nutrient is not wise, especially given Ingrid's important reminders.
- Providing iron may be risky because *Mycobacterium tuberculosis* is heavily dependent on host iron for its own growth. Haematinics should be delayed until after TB treatment (with close follow-up for relapse) or late in treatment when the bacillary burden is low (with close monitoring for exacerbation).
- This session highlights the need for concerted efforts by all TB and nutrition stakeholders towards a systematic and comprehensive downstream programmatic approach. The data shared by the two technical presentations is compelling and calls for urgency in addressing this challenge similar to the TB/HIV collaborative interventions to save lives. The COVID pandemic is an inflection point that should inspire action to eliminate missed opportunities for impact. What would be the concrete next steps towards strengthening partnership between TB and Nutrition stakeholders moving forward?
- Thanks, Ingrid, for your sharing from the perspective of a person inflicted with XDR TB. Could feel the pain and suffering not just because of the TB but the adverse effect of a anti-TB drug, highlighting the need for knowing, observing, monitoring, and following up regarding adverse drug reactions, which are part of rational drug use. The need for TRIPS waiver for COVID-19 diagnostics, therapy, vaccines we should add for ensuring access to anti-TB drugs for MDR.
- India is planning mandatory iron fortification of rice to be supplied to the poor, please speculate on the impact on TB.
- Something to consider as we discuss nutritional supplementation is the fact that there is a huge geographic overlap between parasitic diseases and TB. Parasites decrease nutritional absorption, decrease appetite, and actually blunt the TH-1 immune response needed to fight TB. Therefore, in addition to providing food, it may also be important to screen for and treat parasitic infections like hookworms among severely undernourished TB patients in tropical and subtropical regions.
- India is averse to giving eggs to children in the school lunch programme because of our majoritarian Brahminical dictates, the future of nutrition and, therefore, TB are bleak.
- Completely agree that inclusion of protein in national rations is critical. Not sure how to get around the political quagmire of the opposition to eggs.
- Yes, we need to be very clear about whose cultural acceptance for food we are talking about. It is not the culture of Brahminical tradition.
- We need data on effective, population-based nutrition interventions. The Lancet Nutrition Series, several World Bank publications over the past 15 years, and WHO's Effective Nutrition Action (ENA)

and its electronic Library of ENA all show the nutrition interventions in pregnant women and young children are consistently effective, but not in other population groups. What is the solution?

- When it comes to preventive therapy for household contacts of MDR patients it is nutrition for the whole family that can work on a sustainable basis.
- Agree with Madhavi. I think well-nourished adults make for well-nourished children as well. The positive externalities of mitigating undernutrition among adults may be underestimated.
- Targeting population subgroups of below poverty line families has been happening in India through its Food Public Distribution System from the post-harvest procured cereals from farmers. Other countries can have a look at it.
- What was the average cost of the food packages in the trials for a patient?
- The worry of logistics of implementation is preventing all of us who agree on nutrition support. Let us first agree, logistics can be evolved with community engagement. We underestimate the community insights.
- The cost was one dollar for patient and a family of four.
- It would be important for national TB plans to develop costed action plan for addressing nutrition and TB both as curative and preventive intervention and integrate that in their national strategic plan.
- As far as the worry on food sharing that can occur, if we provide food support for patients, is it not absurd of that worry. It says a lot about the need to support the family that is going through its most vulnerable period.
- Globally if we can accept one therapeutic dictum, "No anti-TB medications without provision of adequate nutrition support." Demand political support for that dictum.
- To move to next steps at country level, we need to have policy on nutrition and TB, if not already developed. Would be useful to have a national task force for providing necessary technical and operational support to national TB programmes, development of action plan, scale-up, resource mobilization – use of Global Fund funding request opportunities, etc.
- WHO is finalizing development of the Framework for Collaborative Action on TB and Comorbidities, which also includes action to address undernutrition.
- Can the WHO please come in and strictly intervene, without ifs and buts and lay out recommendations for food needs on a war footing in countries with serious nutritional deprivation, like India and many African countries. It's no longer a subject of academic curiosities like the much touted "Asian Enigma" often quoted to sideline action. Pandemics are in danger of wiping out under-fed populations if something is not done to take care of food, food and yes food again.
- I think the ICT solutions will help sustainable routine surveillance system and monitoring the treatment process between the countries.
- While nutrition needs to be taken as an integrated work for TB programmes, addressing undernutrition in people with TB is an urgent critical intervention. Can't pass on this too long, too many people with TB dying, an intervention that can reduce mortality by half needs to be taken up now.
- Overnutrition is in fact protective against TB incidence. However, when you tip into diabetes the benefits of over-nutrition go away.

- Well said Dr Lucicia, need to articulate the real need of persons with TB. It is a false constraint. WHO in 1995 had brought out a report bridging the GAP and had added ICD 59.5.
- There is a good deal of hungry and lean people with diabetes who get overshadowed by the perpetual partial knowledge of obese/overweight hence risk of diabetes.
- Yes, diabetes is not many a times due to over-nutrition.
- We began food support to TB patients with WFP around 1994 in Cambodia with 15 kg of rice, a bottle of vegetable oil and some fish cans per month. When patients were kept in district hospital, logistics was easier and we had enough patients to deliver food. Work with WFP was expanded. However, introduction of community DOTS and decentralization of TB service made continuity of such support difficult due to high management cost. That's why many programmes have given up in-kind support to patients, switching to money transfer via cell phone or money card with health education unless some NGO has strong local support.
- Cash transfers to a poor household may not translate to nutritional outcomes. I would opt for cash + kind given the context of poverty and undernutrition
- Totally agree.
- Yes, concern that cash is used to pay off debt and not pay for food.
- So, what about persons with DR TB/MDR TB who really need nutrition much more, as we know the medicines of DR TB has high doses and produce more effects. In Indonesia, honestly, nutrition needs to get strong attention.

Annex 2: Panellists and Speakers



Lucica Ditiu,
Executive Director,
Stop TB Partnership,
Switzerland (Chair)



Suvanand Sahu,
Deputy Executive Director,
Stop TB Partnership,
Switzerland (Moderator)



Hajime Inoue,
Assistant Minister,
Minister of Health, Labour
and Welfare, Japan



Prof. Anurag Bhargava,
Yenepoya Medical College
Mangalore, India



John Paul Dongo,
Director, The Union
Uganda Country Office



Tereza Kasaeva,
Director, Global TB Programme,
WHO, Switzerland



Ingrid Schoeman,
Director of Advocacy and
Strategy, TB Proof,
South Africa



Michael Smith,
HIV Advisor and UNAIDS Focal
Point, World Food Programme,
Italy



Eliud Wandwalo,
Head of Tuberculosis,
The Global Fund to Fight AIDS,
Tuberculosis and Malaria,
Switzerland

Annex 3: Meeting Agenda

Time	Session	Speakers/panellists
11.00 am	Opening remarks and framing discussion	Chair: Lucica Ditiu, Executive Director, Stop TB Partnership
11.10 am	Technical presentations (10 mins x 2) <ul style="list-style-type: none"> • Undernutrition and TB • Diabetes and TB, including bidirectional approaches 	Speakers: Prof. Anurag Bhargava, Yenepoya Medical College Mangalore, India John Paul Dongo, Director, The Union Uganda Office
11.30 am	Interactive panel discussion (60 mins) <ul style="list-style-type: none"> • Introduction by moderator (2 mins) • Q1: From your own experience and your organization's work, tell us what is your perspective on TB and nutrition? (7 min x 4 persons* = 28 mins) *Not including Anurag and John • Q2: What are the next steps you would recommend for the TB and nutrition community in working together to benefit the people? (5 min x 6 persons = 30 mins) 	Moderator: Suvanand Sahu, Deputy Executive Director, Stop TB Partnership Panellists: Tereza Kasaeva, Director, Global TB Programme, WHO Ingrid Schoeman, Director of Advocacy and Strategy, TB Proof Michael Smith, HIV Advisor and UNAIDS Focal Point, World Food Programme Eliud Wandwalo, Head of Tuberculosis, Global Fund
12.30 pm	Q&A (15 mins)	Anurag Bhargava John Paul Dongo
12.45 pm	High-level comments (5 mins)	Hajime Inoue, Assistant Minister for Global Health and Welfare, Ministry of Health, Labour and Welfare, Japan
12.50 pm	Closing summary	Lucica Ditiu/Suvanand Sahu