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NOTORIOUS COVID-19 PANDEMIC GIVES EYE OPENING AID TO DETECT TUBERCULOSIS COMORBIDITY

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The corona virus outbreak of 2019 (COVID-19) has arisen as a major challenge to global public health, necessitating immediate action and resulting in unprecedented global transformation in a brief period of time. This illness has wreaked havoc on economies around the globe, infringed on civil liberties, and wreaked havoc on healthcare system in India. Tuberculosis (TB) is the leading cause of death caused by a single infectious disease, and millions of people worldwide are already at risk. We examine the current discrepancies between the two pandemics, evaluate the possible effect of COVID-19 on TB case management, and consider the challenges presented by the COVID-19 response for TB prevention and control now and in the future. The corona virus outbreak of 2019 (COVID-19) has arisen as a major challenge to population health, necessitating immediate action and resulting in unprecedented global transformation in a brief period of time (1). An older, insidious illness with a high death rate exists against the

backdrop of the COVID-19 pandemic. With an estimated 10 million people infected and 1.5 million deaths as of 2018, tuberculosis (TB) was the leading cause of death caused by a single infectious agent, and it continues to be a serious concern to millions of people around the world (2). With the arrival of COVID-19, many of the world's most TB-affected countries are dealing with heavy COVID-19 caseloads, wreaking havoc on healthcare delivery (3, 4). We examine the current discrepancies between the two pandemics, evaluate the possible effect of COVID-19 on TB case management, and consider the challenges presented by the COVID-19 response for TB prevention and control now and in the future. TB, like COVID-19, is transmitted by small droplets formed by coughing or sneezing (5, 6). Unlike COVID-19, tuberculosis is a bacterium that can cause active disease soon after exposure or remain dormant as latent tuberculosis infection (7).

The latter complicates TB control since there is currently no effective test to assess who is most likely to develop active disease after being infected (8). Despite decades of testing, there is no reliable TB vaccine, so public health interventions similar to COVID-19 are used to mitigate active TB, such as identifying active patients early and tracing their interactions to screen for illness. SARS-CoV-2 (the pathogen responsible for COVID-19 disease) has a reproductive number of 2–4, while TB has a reproductive number of 0.24 in low-burden settings and 4.3 in high-burden settings (9), allowing SARS-CoV-2 more transmissible across settings (10). While both diseases are more common in congested environments, SARS-CoV-2 has been shown to propagate from both pre-symptomatic and asymptomatic individuals, as well as by fomites, unlike tuberculosis (ref). Furthermore, in TB (10) the serial period (the time between an infected person's symptom initiation and that of an infected contact) is greater than 4 months, compared to 3–5 days for COVID-19 (11). Because of these disparities, the COVID-19 pandemic has necessitated a more aggressive public health response. Despite modest gains in global tuberculosis prevention and control campaigns over the last two decades, identifying millions of TB cases continues to be a major challenge. Onward spread of tuberculosis disease cannot be stopped until these individuals are identified and successfully treated, and the centuries-old outbreak will proceed unabated. According to the most recent statistics, existing strategies would not be sufficient to reach global TB elimination goals by 2030 (2). We also recognize that the heightened risk of co-infection with SARS-CoV-2 for those with TB, as well as the prioritization of resources to combat the COVID-19 pandemic, pose additional risks to TB control efforts (12). COVID-19, as Pai warns, has the potential to reverse advances in TB regulation and escalate the outbreak in the coming months if questions are not answered (13, 14) Early studies from a number of high-burden areas back up these fears (13, 15, 16). Excess TB diseases and deaths attributed to COVID-19 delays in health care have also been quantified in recent modeling research, with a projected 10–16 percent rise in actual rates (17 - 21). The COVID-19 pandemic has already started to wreak havoc on the global economy, with decreases in economic development centered on global shipping of goods and services and mass unemployment as a result of lockdowns. The vulnerable, who live hand to mouth, will bear a disproportionate share of the burden.

With little to no social safety nets in many of the countries dealing with TB, HIV, and malaria epidemics, predisposing factors such as malnutrition, hunger, and overcrowding can be anticipated to worsen. These conditions increase the risk of TB transmission leading to a spike in TB cases, further compounding the diagnostic and treatment access constraints already discussed. Even if, by necessity, the emergency response to a pandemic needs

prioritization above normal operations, vertical programming must be avoided when necessary and caution must be taken to prevent disabling other critical resources. The West Africa Ebola outbreak of 2014, for example, contributed to widespread destruction of healthcare systems including immunization services and a related surge in under five and maternal mortality in Liberia, Sierra Leone and Guinea (8, 22). The COVID-19 pandemic has galvanized global and nation public health efforts. Many countries, even those with low health budgets, have made available record-speed services and facilities in response to or in advance of the outbreak of COVID-19. The search for a viral vaccine and cure is progressing extraordinarily quickly. The response often led to partnerships among governments, donors, the private sector, NGOs, private citizens and other stakeholders. A multisectoral response is received in global and national public health activities. This is an opportunity to also reiterate the TB agenda on national levels but will be challenging during the crisis.

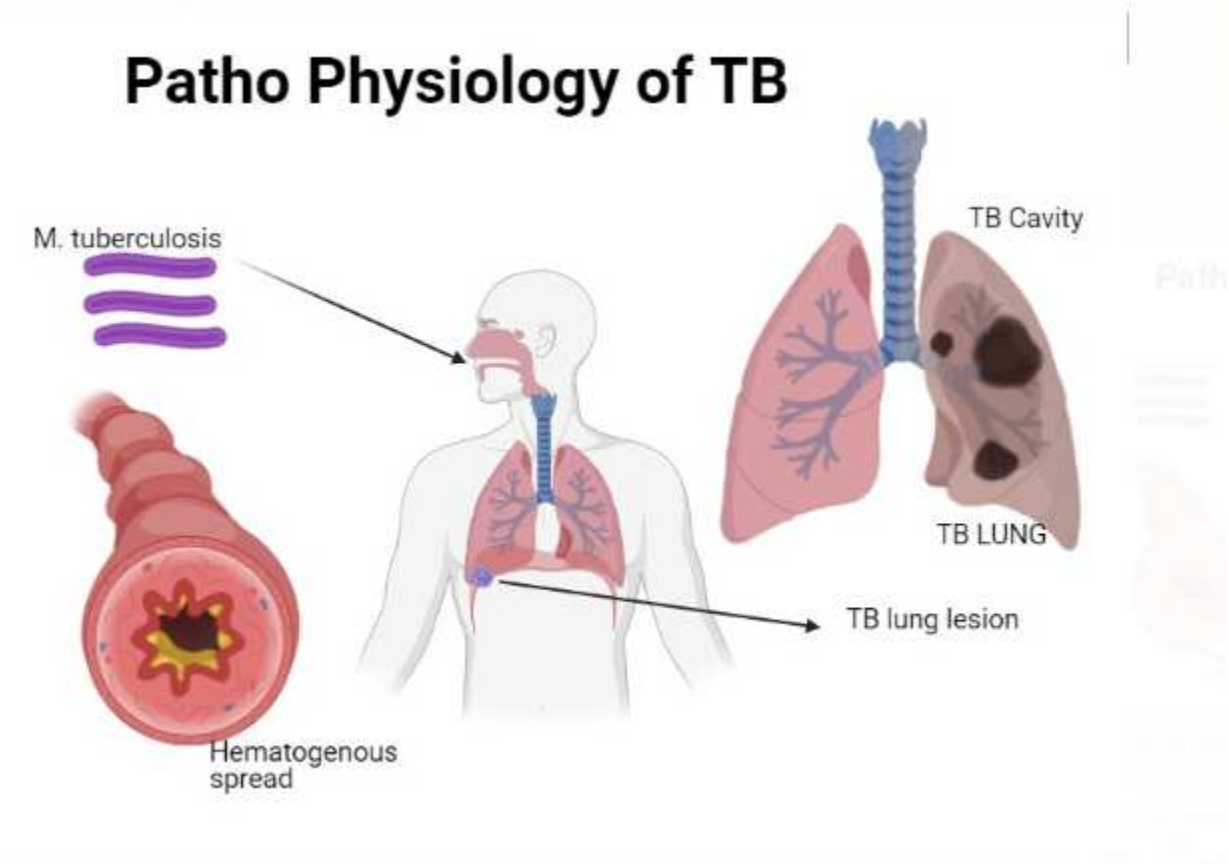

Fig1: Pathophysiology of TB (Made with Bio render)

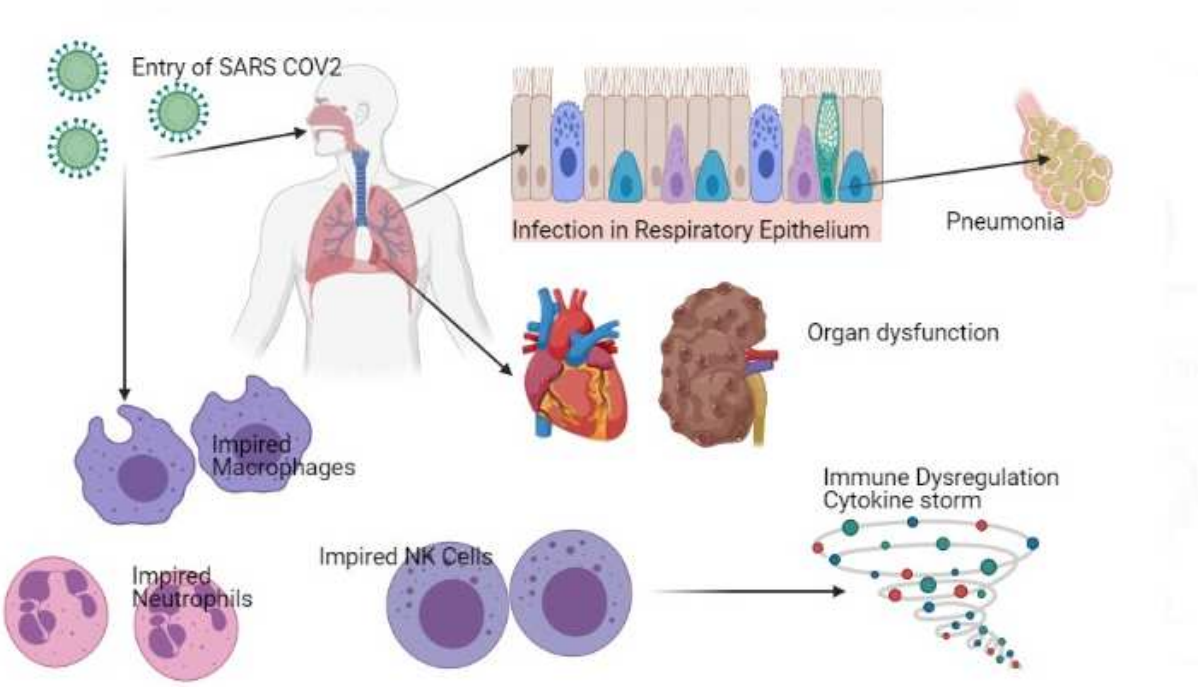

Fig 2 Pathogenesis of SARS-COV 2 (Made with Bio Render)

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