

PRESS RELEASE

NUS researchers find common antibiotic useful in reducing scarring and accelerating recovery in pulmonary tuberculosis patients

Trial in 30 patients shows that doxycycline, in combination with tuberculosis treatment, reduced lung cavity size and increased other markers of recovery

Singapore, 16 June 2021 — Globally, an estimated 10 million people develop tuberculosis (TB) each year and the disease remains a leading cause of death from a single infectious agent. Standard short-course anti-TB treatment still requires a regimen of at least six months of antimicrobial drugs, and drug-resistant TB is an increasing public health threat. Even after the traces of TB disease are quashed, patients often suffer from significant sequelae, such as lung scarring. TB survivors have approximately three to four times greater mortality than their local population.

In pulmonary TB, the most common form of active TB disease, the *Mycobacterium tuberculosis* bacteria causes the formation of sites of high bacterial load, known as cavities. These cavities are poorly penetrated by TB drugs. After TB treatment is complete, there is likely to be tissue damage within the lungs that can lead to further lung problems such as permanent respiratory dysfunction leading to difficulty in breathing, stiffness in the lungs and bronchiectasis, which can make people cough up blood.

Researchers from NUS Yong Loo Lin School of Medicine's Infectious Diseases Translational Research Programme have discovered that the use of a common antibiotic, doxycycline, in combination with TB drug treatment, reduces the size of lung cavities and accelerates markers of lung recovery.

In the Phase 2 double-blind trial conducted at the National University Hospital and TB Control Unit, the treatment was found to be safe, with side effects similar to patients on placebo pills. The study shows promise in delivering a new standard-of-care which can potentially prevent long term complications and the study team is seeking funds for a fully-powered larger scale Phase 3 trial to verify these findings.

“Pulmonary TB patients tend to suffer from lung damage after TB, which is associated with mortality, and poorer quality of life. Doxycycline is a cheap and widely available antibiotic that can decrease lung damage, and potentially improve quality of life for these patients,” said Assistant Professor Catherine Ong, Principal Investigator of the study and member of the Infectious Diseases Translational Research Programme (TRP) at NUS Medicine. The study findings were published in the *Journal of Clinical Investigation*.

Professor Paul Tambyah, who was also involved in the study and is Deputy Director of the Infectious Diseases TRP commented, “While we have been able to successfully treat most

cases of TB for the last few decades, we have seen many people suffer the complications of the lung damage from the original TB infection. If this common drug, doxycycline, can help prevent the complications of “Long TB” (to use a term currently in vogue), this will really help a lot of patients in Singapore and worldwide.”

The Infectious Diseases TRP aims to provide a holistic, patient-centric approach to infectious diseases that are relevant to Singapore and the region. The Programme focuses on programmatic research areas including pathogen evolution and transmission, host-microbe interactions and vaccine and therapeutics development.

About the National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 17 faculties across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established our NUS Overseas Colleges programme in more than 15 cities around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 30 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

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About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore's first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School's founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is Asia's leading medical school and ranks among the best in the world (Times Higher Education World University Rankings 2020 by subject and the Quacquarelli Symonds (QS) World University Rankings by Subject 2020).

For more information about NUS Medicine, please visit <https://medicine.nus.edu.sg/>