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UCT's innovative research supports global 'End TB Strategy'

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Tuberculosis (TB) is the leading infectious fatal disease in South Africa, outstripping HIV for the number one spot. Over the past decade, more than 3 million people have suffered from the disease and every year new cases are reported. TB kills about 270 people in South Africa every day. Addressing this epidemic requires bold initiatives aimed at treating the underlying cause rather than the symptoms.

The University of Cape Town's South African Tuberculosis Vaccine Initiative (SATVI) recently conducted a study highlighting the need of a TB vaccination strategy for HIV exposed new-borns.

Dr Elisa Nemes, senior scientist at SATVI said: "We need an effective TB vaccination strategy for all infants, regardless of HIV exposure. The Bacillus Calmette-Guérin (BCG) vaccine, provides protection from severe types of TB. We tested a new concept: administration of a candidate TB vaccine (MVA85A) at birth, followed by delayed BCG vaccination after HIV infection has been excluded at six weeks of age. MVA85A was safe and induced an early modest immune response that did not interfere with, or enhance, immune response induced by subsequent BCG vaccination. New TB vaccine candidates should be tested in HIV-exposed newborns."

The World Health Organisation's (WHO) *End TB Strategy* calls for a 90% reduction in TB deaths and an 80% reduction in the TB incidence rate by 2030. Without low-cost tools for TB elimination these targets for TB prevention, care and control will not be met.

UCT strives to support the targets of the *End TB Strategy*, by developing low-cost early detection tools and immunisation innovation.

Various departments at UCT are working on TB diagnostics, epidemiology and immunology, innovative early intervention and cost-effective detection research, vaccination projects together with training programmes to advance TB knowledge among young researchers.

The TB Research Group at UCT's Department of Pathology is currently identifying potential drug targets in the cholesterol biosynthesis pathway to combat TB. At the Desmond Tutu HIV Centre, an investigation carried out in one of the townships uncovered

TB transmission hot spots and also highlighted the high-risk potential at schools, including the social behaviour of adolescents. In January this year UCT's research pointed out to the discovery of a blood signal which can detect TB in those infected with HIV and can also provide early warning for at-risk patients. This research could change the way the most vulnerable patients are treated.

Early diagnosis and treatment of active TB is the core of cutting transmission. The use of effective and appropriate treatment reduces infectivity by almost 90% within 48 hours. Unfortunately, and despite the great advances in diagnostics for TB in South Africa, almost one in five patients with laboratory-confirmed TB do not start treatment. Such patients are a high community risk, primarily to their social contacts.

Even though South Africa has made vast strides in reducing the number of incidences and TB related deaths, it is still considered to be a TB high-burden country.

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