Study: New vaccine strategy for HIV-exposed babies

In South Africa, tuberculosis (TB) surpasses HIV as the leading fatal infectious disease. Although anyone can be infected with TB, children born to HIV-positive mothers are at an increased risk, even if they remain HIV negative.

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A staggering one in three pregnant women are HIV positive in South Africa, and it is estimated that 50,000 HIV positive babies are born each year. To mitigate the impact of exposure, a vaccine strategy could be developed to protect those infants, regardless of their HIV status.

A recent University of Cape Town (UCT) study tested and confirmed the safety and feasibility of a new vaccination strategy for HIV-exposed infants. This study was conducted by a large team of researchers, led by Dr Elise Nemes, senior scientist at UCT's South African Tuberculosis Vaccine Initiative (SATVI); Professor Mark Hatherill, principal investigator of the study; Professor Anneke Hesseling from the Desmond Tutu Tuberculosis Centre; and Professor Helen McShane from the Jenner Institute, Oxford University.

"When multiple vaccines are administered, the vaccination strategy is referred to as 'prime-boost', where the prime vaccine is the first one administered and it initiates an immune response, this is then boosted by the second vaccine," says Nemes.

Worldwide, the Bacille Calmette-Guérin (BCG) vaccine is the most widely used, and is given to children who have a higher risk of contracting TB. It improves the child's immune system, so it can fight the TB bacteria, thus preventing infection. Usually, BCG is given as a prime vaccination, without a follow-up injection.

New concept

This study tested a new concept, in which the candidate vaccine (MVA85A) was administered as the prime at birth, followed by a BCG as a boost.

“We found that MVA85A was safe and induced an early modest immune response that did not interfere with, or enhance an immune response induced by a subsequent BCG vaccination. This study tested for safety and immunogenicity only, a larger study would be required to test for protection again TB,” Nemes adds.

Even though the TB vaccine research has gained momentum in recent years, there are still major obstacles. A new generation of TB vaccines and strategies need to be developed and tested, which offer greater protection than the currently used BCG and are safe enough to be used in HIV-endemic countries.

In the latest *Global Tuberculosis Report*, the World Health Organisation noted that there is a huge funding gap for TB care and prevention research. This gap needs to be closed. “An effective TB vaccination strategy is needed for all infants, regardless of HIV exposure,” concludes Nemes.