

Urgent need for tuberculosis vaccines; experts report progress, obstacles in growing drug resistance

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Drawing on recent findings of a significant rise in cases of drug-resistant tuberculosis in the UK and globally, top TB researchers at a briefing today in London called for greater focus on the quest for new vaccines—a crucial long-term, cost-effective method for addressing the growing threat.

The event at the Science Media Centre follows the release of troubling new research published in *The Lancet* in August suggesting that levels of [drug-resistant TB](#) are higher than previously appreciated, leaving few options for patients with drug-resistant TB. TB is already the world's second leading infectious killer. The WHO estimates that 9 percent of cases of multidrug-resistant TB in fact have extensively drug-resistant TB for which even fewer drugs are effective, and *The Lancet* study revealed that rates of XDR-TB ranged from 0.8-15.2% of MDR-TB cases at study sites across the world.

"Vaccines are the ultimate long-term, cost-effective solution for addressing tuberculosis," said Helen McShane, PhD, Professor of Vaccinology, University of Oxford, and developer of the vaccine candidate that is furthest along in clinical trials. "It is important that we continue to develop better drugs and diagnostics to help us rapidly diagnose TB and identify drug-resistant strains, but we must invest in vaccine research now if our ultimate goal is to be able to prevent the disease rather than forever chase growing drug resistance with new drugs."

McShane was joined at the London briefing by Ann Ginsberg, MD, PhD, Vice President of Scientific Affairs at Aeras and Tim McHugh, PhD, Professor of Medical Microbiology, University College London. The three scientists are working on the frontlines of efforts to combat the disease, which killed an estimated 1.45 million people in 2010—the

equivalent of the populations Birmingham and Liverpool combined.

In the last decade, Ginsberg said, TB [vaccine research](#) has made dramatic strides. The number of TB vaccines in clinical trials has grown from zero to more than a dozen. MVA85A, the vaccine developed in McShane's laboratory, is the most clinically-advanced TB [vaccine candidate](#) in the world. The first efficacy results are expected early next year based on the outcome of a clinical trial in South Africa, carried out at the South African Tuberculosis Vaccine Initiative with support from Aeras, The Wellcome Trust, the European Commission, Emergent BioSolutions and the Oxford-Emergent Tuberculosis Consortium.

"Vaccines that prevent adolescents and adults from developing infectious tuberculosis would be the single greatest advance in the global fight against the disease," said Ginsberg. "Much of the most exciting [TB vaccine](#) discovery work is happening in the United Kingdom and Europe with significant leadership and support from the UK government."

UK and Global TB Trends

More than half of all reported [TB cases](#) are in Asia, most of them in India, Pakistan, China and Indonesia. South Africa has the highest rate in Africa, which accounts for 26 percent of the burden of disease globally.

In 2011, the incidence rate in the UK rose 6.6% over the previous year and London, which is home to almost 40 percent of all cases in the UK according to a report released in July by the Parliamentary Office of Science and Technology, has been dubbed the "TB Capital of Western Europe."

Globally, [drug resistance](#) has grown because of misuse of anti-TB drugs, poor management of the disease and transmission of drug-resistant cases from person to person; and the impact of the disease on health systems and national economies is only beginning to be felt, McHugh said. In the UK, the total number of cases of drug-resistant TB has risen by more than 50 percent in the last decade.

"Treatment for MDR-TB is more expensive than for drug-susceptible TB, and is protracted lasting up to two years, the drugs used are unpleasant with significant side effects" McHugh said. "In many settings, clinicians are unable to diagnose MDR-TB rapidly, increasing the risk of patients spreading the drug resistant strains while receiving treatment that may be ineffective against the infection."

Studies regarding MDR-TB, such as the one published in *The Lancet* on August 30, confirmed what researchers have been seeing in their laboratories and clinics.

"The development of new treatments and diagnostics are vital for treatment of individuals infected with drug-[resistant strains](#) of TB," McHugh said. "But drugs alone will not control the spread of TB and investments in vaccines are essential to protect the wider community."

Once known as "consumption" for the slow wasting away of people who die from it, tuberculosis is one of history's great global killers. One out of every three people globally is thought to be infected by the airborne TB organism, although a much smaller number will go on to develop the disease.

Provided by Burness Communications

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