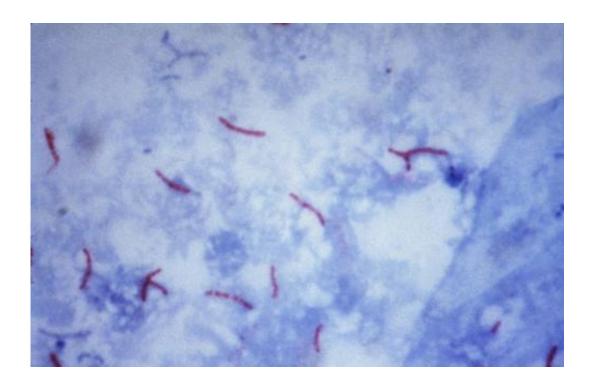# New research could save TB patients from months of debilitating, costly treatment

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This photomicrograph reveals Mycobacterium tuberculosis bacteria using acid-fast Ziehl-Neelsen stain; Magnified 1000 X. The acid-fast stains depend on the ability of mycobacteria to retain dye when treated with mineral acid or an acid-alcohol solution such as the Ziehl-Neelsen, or the Kinyoun stains that are carbolfuchsin methods specific for M. tuberculosis. Credit: public domain

It is possible to predict how well tuberculosis (TB) responds to drug treatment, according to a new study at Brighton and Sussex Medical School.

Dr Simon Waddell, working with a team of researchers from the UK, South Africa and Finland, has discovered bacterial biomarkers that predict early treatment success. This may allow [patients](#) to finish [drug therapy](#) early, reducing the difficult and debilitating side effects of the drugs and cutting treatment costs.

There were 9 million new cases and 1.5 million deaths from TB in 2013, and there are around 6,000 cases in the UK annually. The standard drug therapy is a combination of four drugs taken over six months. Side effects can be severe, and it can be difficult for patients to stay on treatment for the duration of therapy, leading to ineffective treatment and the emergence of drug-resistant TB.

Dr Waddell and collaborators mapped the responses of TB bacteria during standard drug therapy to understand why some bacteria survive through months of [drug treatment](#). The study showed for the first time that by testing patients☐ sputum, specific changes could be identified in the TB bacteria two weeks after starting drug therapy that could predict the success of treatment six weeks later.

☐This exciting proof-of-principle study showed that bacterial responses could be used to understand drug action in patients, and that these signatures may be used as biomarkers allowing us to predict when patients may safely finish treatment,☐ says Dr Waddell.

☐Profiling TB bacteria in this way may help find predictive markers of [treatment](#) success that are desperately needed in clinical trials and in the clinic. This would reduce the cost of drug trials needed to test new drugs for TB, and allow doctors to quickly stratify patients who are not responding to drug therapy.☐

  **More information:** Isobella Honeyborne et al. Profiling persistent tubercule bacilli from patient sputa during therapy predicts early drug

efficacy, *BMC Medicine* (2016). DOI: 10.1186/s12916-016-0609-3

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