Why is long-term therapy required to cure tuberculosis?

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Understanding why other bacteria become resistant to antibiotics could hold the key to understanding why TB takes so long to cure, say researchers in a policy paper in PLoS Medicine.

Patients with TB typically have to take 4 antibiotics for 2 months and then continue 2 of these antibiotics for an additional 4 months. Why is such long treatment needed?

Lalita Ramakrishnan (University of Washington) and colleagues say that traditionally the answer was thought to lie in the fact that the tuberculosis microbe achieves a TB-specific "dormant" or non-replicating state in an infected person. Because virtually all types of antibiotics act only on replicating bacteria, the dormant state of TB is thought to render it resistant to treatment.

But the authors now challenge this traditional view. In the light of data on treating human TB and other bacterial infections, they suggest that the non-replicating state is not TB-specific and that the number of non-replicating bacteria correlates with total bacterial burden rather than TB-specific pathology.

"This correlation between bacterial burden and time to cure is not unique to TB, as it has been found in other bacterial infections, both acute and chronic," they say.

Understanding and countering the ways in which bacteria in general

(rather than TB specifically) become resistant to antibiotics, say Ramakrishnan and colleagues, "may hold the key to reducing the duration of treatment of all recalcitrant bacterial infections, including TB."

Source: Public Library of Science