

Treatment Outcomes for Patients with Multidrug-Resistant Tuberculosis

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The full report is titled "Time to Sputum Culture Conversion in Multidrug-Resistant Tuberculosis: Predictors and Relationship to Treatment Outcome." It is in the 2 May 2006 issue of *Annals of Internal Medicine* (volume 144, pages 650-659). The authors are T.H. Holtz, M. Sternberg, S. Kammerer, K.F. Laserson, V. Riekstina, E. Zarovska, V. Skripconoka, C.D. Wells, and V. Leimane.

What is the problem and what is known about it so far?

Tuberculosis is a bacterial infection that usually involves the lungs, although it can also involve other parts of the body. When a person inhales tuberculosis bacteria, an initial infection develops that does not cause disease. The bacteria can lie dormant in the body after this initial infection but cause disease years later, when the body is under stress, because of poor nutrition or disease. A person with active tuberculosis disease is contagious, meaning that the infection can spread from one person to another, almost always through coughing. Once a person is diagnosed with tuberculosis, treatment involves taking a combination of drugs, usually by mouth, for at least 6 months. Unfortunately, some forms of tuberculosis are not sensitive to the 2 usual drugs used to treat it (multidrug-resistant tuberculosis). Multidrug-resistant tuberculosis requires treatment with more and/or different drugs. When treating tuberculosis, doctors test the fluid patients cough up (sputum smear) to see whether it contains bacteria. A negative sputum smear means that the patient is no longer infectious. Usually these samples are also sent for culture growth, which often takes 8 to 10 weeks for a result. It is important to know when the tuberculosis bacteria no longer grow in culture because negative cultures mean that the disease is improving.

Why did the researchers do this particular study?

To see how long it took for sputum cultures to become negative after treatment for multidrug-resistant tuberculosis and if any patient characteristics were associated with quicker conversion. They also wanted to see whether patients whose cultures became negative more quickly did better than those whose cultures took longer to convert.

Who was studied?

204 patients treated for multidrug-resistant tuberculosis in Latvia, a country in north-central Europe, in 2000. All of the patients in this study received treatment through a program in which someone observed patients take drugs that were carefully matched to the specific drug susceptibility characteristics of each patient's tuberculosis disease.

How was the study done?

The researchers examined information in medical records about patient characteristics, tuberculosis treatment, and laboratory tests. They then calculated the times between the start of treatment and negative sputum cultures and looked for characteristics associated with sputum culture conversion and final treatment outcome.

What did the researchers find?

Of the 204 patients, 167 had positive cultures when starting treatment. Of these, 129 patients had cultures that converted to negative (on average within 2 months) and 38 did not. Patients who had previous treatment for multidrug-resistant tuberculosis, and high amounts of bacteria in the initial culture, x-ray abnormalities in both lungs, and/or tuberculosis bacteria that were resistant to a larger number of drugs, took the longest to have conversion. Treatment outcomes were worse for patients who did not have negative sputum cultures within 2 months than for those who converted within 2 months.

What were the limitations of the study?

Some patients missed their monthly sputum cultures. This study was done in a foreign country whose treatment strategies differ from those in the United States.

What are the implications of the study?

Under the type of treatment delivered for multidrug-resistant tuberculosis in Latvia in 2000, most patients will have culture conversion within 2 months. Results of chest radiography and sputum culture can help identify patients who might take longer to achieve conversion and therefore have a poor treatment outcome.

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