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Latent Tuberculosis Infection in Children: A Call for Revised Treatment Guidelines.

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BACKGROUND: Guidelines for latent tuberculosis infection do not consider drug-resistance patterns when recommending treatment for immigrant children.

OBJECTIVES: The purpose of this research was to decide at what rate of isoniazid resistance a different regimen other than isoniazid for 9 months should be considered.

METHODS: We constructed a decision tree by using published data. We studied 3 regimens considered to be effective for susceptible organisms: (1) isoniazid for 9 months, (2) rifampin for 6 months, and (3) isoniazid for 9 months plus rifampin for 6 months. In addition, we evaluated a regimen of isoniazid and rifampin for 3 months. Our base case was a 2-year-old child from Russia with a tuberculin skin test reaction of 12 mm. We assumed a societal perspective and expressed results as cost and cost per case of tuberculosis prevented. We conducted sensitivity analyses to test the stability of our model.

RESULTS: In our baseline analysis, rifampin was the least costly treatment regimen for any child arriving from an area with an isoniazid-resistance rate of $\geq 11\%$. Treatment with isoniazid plus rifampin was the most effective but would cost more than \$1 million per reactivation case prevented. Isoniazid would become the least costly regimen if any of the following thresholds were met: rifampin resistance given isoniazid resistance of more than 82%; rifampin resistance given no isoniazid resistance of $>9\%$; cost of rifampin more than \$47/month; effectiveness of rifampin lower than 63%; effectiveness of isoniazid higher than 74%; and cost of pulmonary tuberculosis less than \$7661. Isoniazid and rifampin for 3 months was the least costly for all cases from areas with isoniazid resistance of $<80\%$ as long as the regimen's effectiveness was $>50\%$ for susceptible bacteria. However, this assumption remains to be proven.

CONCLUSION: Because of the high prevalence of isoniazid resistance, rifampin should be considered for children with latent tuberculosis infection originating from countries with $>11\%$ isoniazid resistance.

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