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The Risk of Inadequate Tuberculosis Preventive Therapy among Alaska Schoolchildren

Preventive therapy reduces the likelihood of tuberculosis (TB) infection progressing to TB disease by 69%.¹ The cohort of all 290 Alaska schoolchildren with newly positive PPD skin tests during the 1994-1995 school year (see Epidemiology Bulletin 25) was studied to determine risk factors for not completing at least 6 months of preventive therapy. Treatment information on this cohort was obtained from school nurses, health care providers and the Division of Public Health. The health care provider was determined by the signature on each child's evaluation referral form. Any child who received less than 6 months of INH or an acceptable alternative medication was considered to have had inadequate preventive therapy. The relative risks for receiving inadequate therapy were determined by school grade, health care provider, race, history of BCG, birthplace and school location (urban or rural).

Of 290 schoolchildren with a newly positive PPD, 269 (93%) had treatment information available. Of these, 172 (64%) received at least 6 months of preventive therapy, 32 (12%) received 1-5 months of therapy and 65 (24%) received no therapy. School grade was not associated with a significant risk of receiving inadequate preventive therapy, although the risk did increase slightly for the higher grades (Table 1). The relative risk (RR) for receiving inadequate preventive therapy was 1.4 for schoolchildren whose health care provider was a physician in private practice compared with those who received care through the public health, military, community health center or IHS/health corporation system (Table 1).

Only 5% of Alaska Native schoolchildren received inadequate preventive therapy as compared with 50% of Asian schoolchildren for a RR of 9.7 (Table 1). Children who attended an urban school were 4.4 times more likely than rural school attendees to receive inadequate preventive therapy (Table 1). Foreign born children were 2.1 times more likely to receive inadequate preventive therapy than U.S. born schoolchildren (Table 1). Children with a BCG vaccination were 2.2 times more likely to have received inadequate preventive therapy than those without a BCG vaccination (Table 1).

Discussion

Of the two racial groups with the highest rates of TB, Alaska Natives and Asians, Asian schoolchildren were 9.7 times more likely to receive inadequate preventive therapy. These schoolchildren were also likely to have received BCG and been born in a country with a high prevalence of TB. The use of preventive therapy should be considered for any BCG-vaccinated child with a tuberculin skin test reaction of ≥ 10 mm of induration, particularly if the vaccinated child was born in a country with a high prevalence of TB.² Urban schoolchildren were more likely to receive inadequate preventive therapy than rural schoolchildren.

Table 1. Possible risk factors for inadequate preventive therapy

Possible risk factors	Inadequate Therapy (%)	Adequate Therapy	RR (95% CI)
Grade			
Preschool/ Kindergarten	7 (29)	17	referent
Elementary	25 (36)	44	1.2 (0.6-2.5)
Middle	29 (39)	45	1.3 (0.7-2.7)
High	41 (40)	60	1.4 (0.7-2.7)
Provider			
Public	46 (30)	106	referent
Private	47 (43)	62	1.4 (1.0-2.0)
Race			
Alaska Native	3 (5)	55	referent
White	56 (41)	82	7.9 (2.6-24.1)
African-American	4 (44)	5	8.6 (2.3-32.2)
Asian	27 (50)	27	9.7 (3.1-30.0)
Location			
Rural*	5 (10)	147	referent
Urban [†]	92 (42)	125	4.4 (1.9-10.2)
Birthplace			
U.S. born	43 (26)	125	referent
Foreign born	48 (55)	40	2.1 (1.6-2.9)
Vaccination			
No BCG	51 (27)	135	referent
BCG	30 (60)	20	2.2 (1.6-3.0)
* Rural includes the North and West, and Aleutians regions [†] Urban includes the Southwest, Southeast, Southcentral and Interior regions			

Recommendations

1. Schoolchildren with a newly positive PPD skin test should receive 9 months of preventive therapy,* regardless of BCG status or country of birth.
2. State, municipal and local public health staff are available for consultation on preventive therapy.

* Those ≥ 16 years of age may receive 6 months of preventive therapy.

References

1. International Union Against Tuberculosis Committee on Prophylaxis. Efficiency and various durations of isoniazid preventive therapy for tuberculosis: five years of follow-up in the IUAT trial. Bull World Health Organ 1982;60:555-564.
2. Centers for Disease Control and Prevention. The role of BCG vaccine in the prevention and control of tuberculosis in the United States: a joint statement by the Advisory Council for the Elimination of Tuberculosis and the Advisory Committee on Immunization Practices. MMWR 1996;45 (No. RR-4): 1-18.

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