

Nasopharyngeal pneumococcal colonization among Kenyan children: antibiotic resistance, strain types and associations with

Rusen, ID; Fraser-Roberts, L; Slaney, L; Ombette, J; Lovgren, M; Datta, P; Ndinya-Achola, JO; Talbot, JA; Nagelkerke, N; Plummer, FA; Embree, JE

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Abstract:

OBJECTIVES: To compare pneumococcal nasopharyngeal colonization rates among HIV-1-infected children with those of uninfected children born to seropositive mothers and those of seronegative controls. To determine the predominant serotypes and antimicrobial susceptibility among pneumococcal isolates in Kenya. **METHODS:** Nasopharyngeal pneumococcal colonization was examined in 207 children recruited from the Perinatal HIV-1 Transmission Study conducted in Nairobi, Kenya. Colonization was compared among HIV-1-infected children, uninfected children born to seropositive mothers and control seronegative children. Isolates were serotyped and tested for antibiotic susceptibility to penicillin, tetracycline, erythromycin, chloramphenicol, clindamycin and rifampin. **RESULTS:** Colonization was higher among HIV-1-infected and uninfected children than among controls only when associated with respiratory illnesses (86% of 7 and 60% of 20 vs. 29% of 31, $P = 0.004$). No differences were observed when children were asymptomatic (20% of 35, 35% of 94 and 22% of 101). Intermediate penicillin resistance was found in 60% of 94 isolates, 28% were resistant to tetracycline and all isolates were susceptible to the other antibiotics tested. Sixteen serotypes were identified, with 13, 15, 14, 6B and 19F comprising 73% of isolates. Serotype 13 was found in 31% of colonized children. This serotype and 2 others isolated are not found in the current 23-valent polysaccharide vaccine. Overall 41% of colonized children harbored nonvaccine strains. **CONCLUSIONS:** Although nasopharyngeal pneumococcal colonization was high among children with respiratory illness born to HIV-1-seropositive mothers, increased asymptomatic colonization did not explain the increased risk of invasive pneumococcal disease associated with HIV-1 infection. Intermediate penicillin resistance was common but high level penicillin and multiple antibiotic resistance were not seen. The prevalence of the unique strains circulating in this region will need to be considered in the design of effective pneumococcal vaccines for use in East Africa