

Getting Under the Skin: Socioeconomic Disparities in Invasive Pneumococcal Disease among Children <5 years old, Selected States, 2013

Author: Matthew Westercamp
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Summary: Simple explanations don't explain racial disparities. Despite an effective vaccine reducing pneumococcal disease in both black and white children, higher incidence of poverty among black children does not fully explain remaining disparities in pneumococcal disease.

Abstract:

Background: In 2014, >57,000 unaccompanied children (UC) from Central America crossed the US-Mexico border. In June–July 2014, 16 UC aged 13–17 years in five shelters were hospitalized with acute respiratory illness. An investigation was conducted in four states to evaluate disease transmission.

Methods: Medical charts were abstracted for hospitalized UC. Nasopharyngeal (NP) and oropharyngeal (OP) swabs were collected from UC with influenza-like illnesses (ILI) for real-time PCR detection of respiratory pathogens. To detect pneumococcal carriage, NP swabs were collected among ILI and asymptomatic assenting UC at four shelters. *Streptococcus pneumoniae* was identified by optochin susceptibility and bile solubility. Pneumococcal blood isolates and NP swabs were characterized by serotyping (Quellung) and whole-genome sequencing (WGS).

Results: Among 16 UC hospitalized for respiratory infections, 6 (43%) of 14 with blood cultures had *S. pneumoniae* detected, all serotype 5 multilocus sequence type 289, and 4 (44%) of 9 tested were positive for influenza viruses. Among 48 non-hospitalized UC with ILI, 46 (96%) had ≥ 1 respiratory pathogen including *Haemophilus influenzae* (n=29), rhinoviruses (n=21), enteroviruses (n=19; none were EV-D68), and influenza viruses (n=13). Among 812 UC with NP swabs collected to detect carriage, 774 (95%) had adequate culture growth. Of these, 181 (23%) yielded pneumococcus; 68 (38%) were serotype 5. WGS detected two related clusters, differing by a resistance-conferring recombination event within the *folA* gene.

Conclusions: A comprehensive investigation showed that *S. pneumoniae* serotype 5, rarely a cause of disease or colonization in US adolescents, and influenza were primary etiologies of this severe disease outbreak among UC. Other respiratory agents might have contributed to milder disease and facilitated transmission. Pneumococcal and influenza vaccinations were used to prevent further transmission.