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Select Abstract:

Vaccines for a “Piece de Resistance”: Prevention of Antimicrobial Resistance Among Children Aged <5 Years with the 13-valent Pneumococcal Conjugate Vaccine — Selected U.S. Areas, 2004–2012

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Background: Antimicrobial resistant *Streptococcus pneumoniae* (pneumococcus) causes 1.2 million U.S. infections annually among all ages. Antimicrobial resistant invasive pneumococcal disease (IPD) decreased after 7-valent pneumococcal conjugate vaccine introduction in 2000. A Healthy People 2020 (HP2020) goal is to reduce IPD not susceptible (NS) to ≥ 1 antimicrobials among children aged <5 years old from 8.3 (2008) to 6 cases per 100,000 children. We evaluated progress towards this goal following the 2010 introduction of 13-valent pneumococcal conjugate vaccine (PCV13).

Methods: We defined IPD as isolation of pneumococcus from normally sterile sites among residents aged <5 years from ten Active Bacterial Core surveillance areas during 2004–2012. Isolates were serotyped and tested for antimicrobial susceptibility (using Clinical Laboratory Standards Institute breakpoints). NS-IPD cases were NS to ≥ 1 of the following antimicrobials: penicillin, amoxicillin, erythromycin, cefotaxime, ceftriaxone, cefuroxime, tetracycline, vancomycin, and levofloxacin. We compared rates of NS-IPD observed in 2012 (after PCV13 introduction) to rates expected in the absence of PCV13, using chi-squared analyses.

Results: We identified 3,194 pediatric IPD cases during 2004–2012. In 2012, the observed rate (cases per 100,000 children) of NS-IPD was 3.5 (below HP2020 goal) compared to the expected rate of 12 in the absence of PCV13 (69% decline; $P < .0001$). Observed antimicrobial-specific NS-IPD rates were significantly lower in 2012 for penicillin (0.5; 93% decline; $P < .0001$), amoxicillin (0.8; 89% decline; $P < .0001$), erythromycin (3.2; 72% decline; $P < .0001$), cefotaxime (0.4; 94% decline; $P < .0001$), ceftriaxone (0.4; 93% decline; $P < .0001$), cefuroxime (1.5; 81% decline; $P < .0001$), and tetracycline (1.1; 86% decline; $P < .0001$).

Conclusion: PCV13 use among children has allowed the US to achieve a key HP2020 objective 8 years in advance. Continued surveillance is needed to ensure that reductions persist.