

Estimating the value of pneumococcal conjugate vaccines for improving the health of HIV exposed children in PEPFAR focus countries

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Introduction

The US President Emergency Plan for AIDS Relief (PEPFAR)¹ includes 15 “focus countries” that receive funding to improve child health outcomes among HIV-exposed children and have guidance that supports immunizations and new vaccine technologies. No PEPFAR focus country is currently using pneumococcal conjugate vaccines (PCV) as part of their child health wrap-around services in spite of their proven efficacy, safety, immunogenicity and cost-effectiveness and the high pneumococcal and HIV burden in the countries. Since pneumococcal pneumonia is up to 40 times more common in HIV infected children compared to uninfected children and late presentations, poor diagnostic capability, and increasing antibiotic resistance, makes prevention the only viable alternative, we sought to estimate the value of vaccination by determining the vaccine-attributable reduction (VAR) and number of lives that can be saved by introducing PCV.

Methods

For the 15 PEPFAR focus countries we calculated the number of HIV exposed children using data from UN databases², and then projected the number of clinical pneumonia cases and pneumonia deaths potentially preventable based on results from the South African efficacy trial. Assumptions include a preventable incidence of clinical pneumonia of 25.7 per 1000 child years of observation (Madhi S et al. Clin Infect Dis)³, and a 5% case-fatality rate among cases. The number of HIV-exposed infants was calculated at 1.12 million. We used a GAVI subsidized rate of 15 US cents per dose of vaccine for eligible countries.

Results

Our results showed that each year an estimated 1.12M HIV exposed infants are born in the 15 PEPFAR focus countries. Assuming the incidence of preventable clinical LRTI observed in the South African trial applies to all HIV-exposed infants³, we estimate that 28,868 episodes of preventable pneumonia occur each year, and that 1,443 vaccine preventable deaths occur as well.

GAVI eligible PEPFAR countries¹ will need only US\$ 291,000 per year to provide PCV to all HIV exposed children at GAVI subsidized rate of 0.15 per dose. US\$5.74 million per year will be needed to provide PCV to all children in PEPFAR focus countries at GAVI subsidized rate of 15 US cents per dose. This investment can be covered under the US\$ 50 billion new PEPFAR authorization potentially prevent thousands of pneumonia cases and deaths

Conclusions

Global HIV programs like PEPFAR that support wrap-around services including immunizations should consider introduction of PCV to improve child survival in HIV exposed children as a complement to existing interventions^{5,6}. In addition, indirect effects on other children and adults will result in prevention of more disease and result in economic gains from savings in hospitalizations and other health costs⁶.