

# Assessing the Impact of the Childhood Hepatitis B Immunization and Need for the Hepatitis B Vaccine Birth Dose in Sierra Leone, 2018

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## 1. BACKGROUND

- Sierra Leone introduced 3 doses of hepatitis B vaccine (HepB3) in 2007 for infants aged 6, 10, and 14 weeks old
- HepB birth dose is not provided to prevent mother-to-child transmission (MTCT)
- We aimed to assess impact of infant HepB vaccination and evaluate MTCT of hepatitis B virus (HBV) with the existing HepB3 schedule

## 2. METHODS

- We conducted a 2-stage cluster survey among children aged 4–30 months, their mothers, and children aged 5–9 years in Bo, Bombali, and Western Area Urban districts
- We tested all participants for HBV surface antigen (HBsAg) by Alere Determine™ rapid test and collected children’s HepB vaccination history (card/parental recall)
- Serum from all HBsAg+ mothers and 1 HBsAg- mother per cluster was tested for total antibodies to HBV core antigen (total anti-HBc), HBsAg, HBV e antigen (HBeAg), and HBV DNA levels
- We assessed the association of HBsAg prevalence in children with HepB vaccination status and maternal HBV markers

## 3. RESULTS

- HBsAg prevalence was 1.3% (95% CI 0.8–2.0%; 20/1889) among 4–30-month olds, 1.6% (1.1–2.3%; 32/2025) among 5–9-year-olds, and 9.8% (8.1–11.7%; 169/1776) among mothers of the younger children
- HepB3 coverage was 85% (95% CI 82–87%) among children aged 4–30 months and 77% (72–81%) among children aged 5–9 years
- Among HBsAg+ children, 70% (14/20) of children aged 4–30 months and 56% (18/32) of children aged 5–9 years received HepB3
- HBsAg prevalence was higher (5.9%; 10/169) among children with HBsAg+ mothers than among those with HBsAg- mothers (0.7%, 6/1605; adjusted OR=10.6 [95% CI 2.8–40.8])
- Among HBsAg+ mothers, 91% (126/139) had detectable HBV DNA and 9% (13/139) were HBeAg+
- HBsAg positivity in young children was associated with maternal HBsAg (p=0.026), HBeAg (p<0.001), and HBV DNA levels ≥200,000 IU/mL (p<0.001)

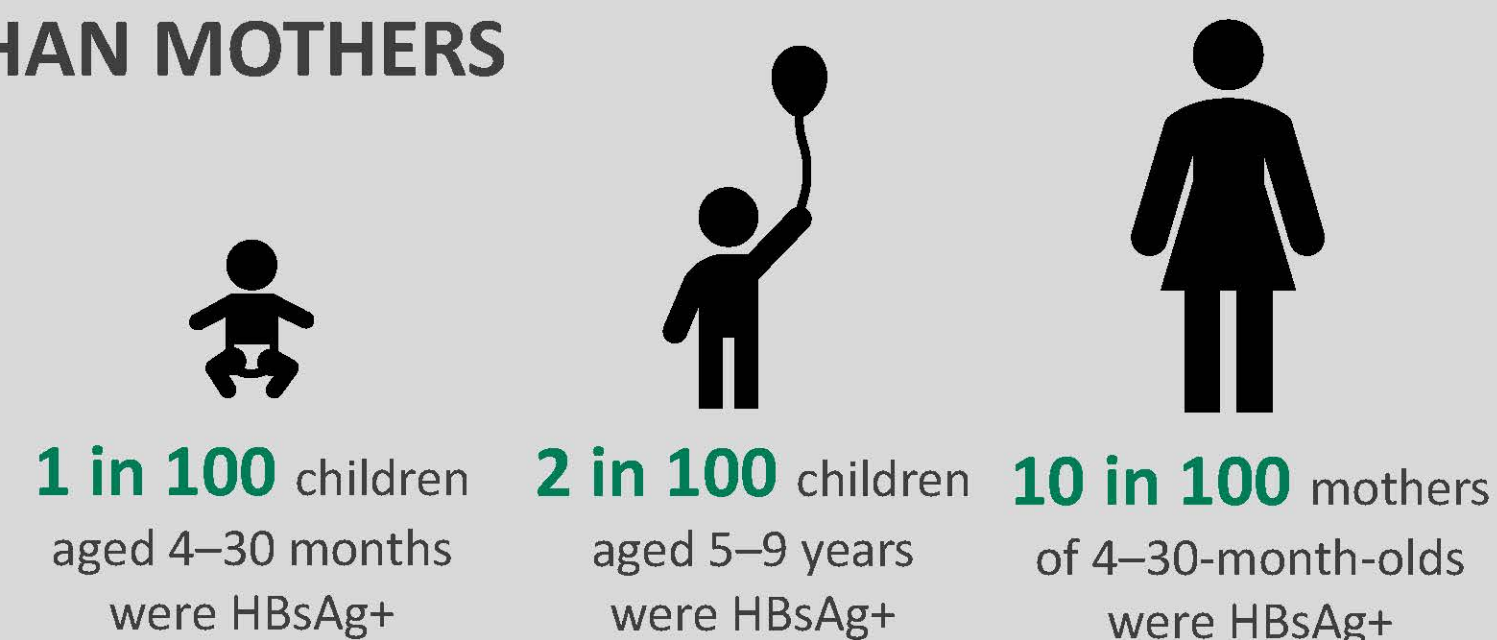
## 4. CONCLUSIONS

- HBsAg prevalence was much lower among children than mothers indicating infant HepB vaccination has substantially lowered HBV burden in Sierra Leone
- As HBsAg positivity in young children was strongly associated with having a mother with active HBV infection and 70% of HBsAg+ children had HepB3, the birth dose is needed to prevent chronic HBV infections due to MTCT in children

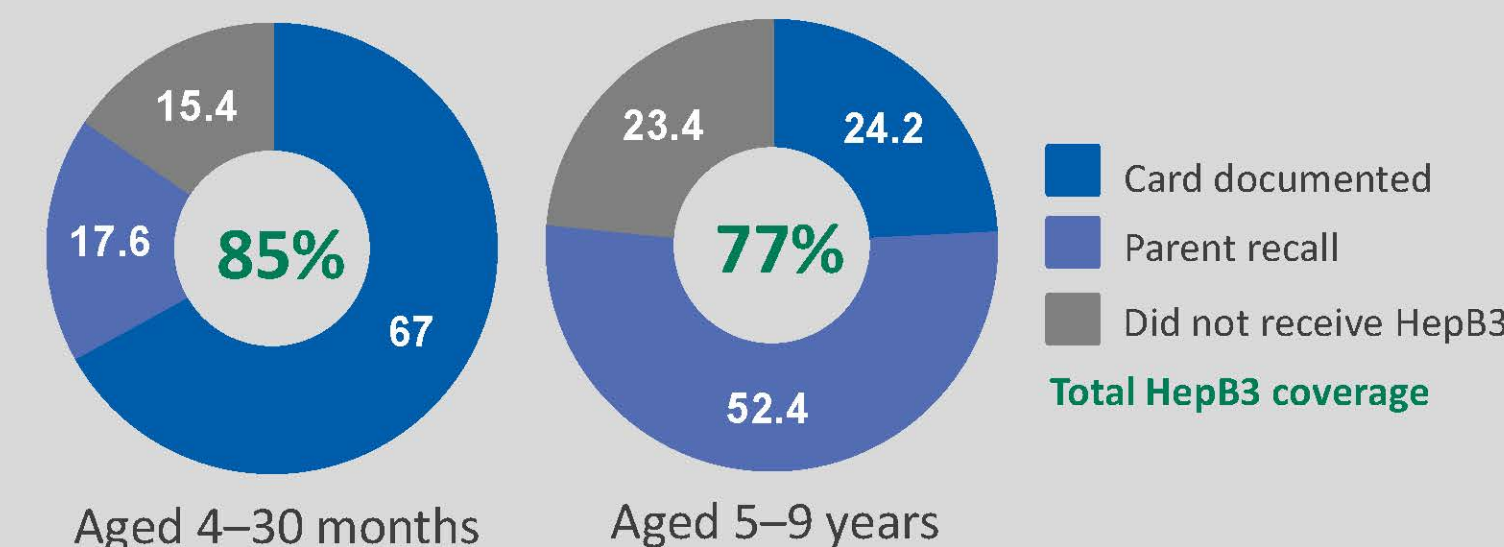
Routine childhood HepB vaccination has substantially lowered HBV burden in children in Sierra Leone. However, to prevent chronic HBV infections in children due to MTCT, the birth dose is needed.



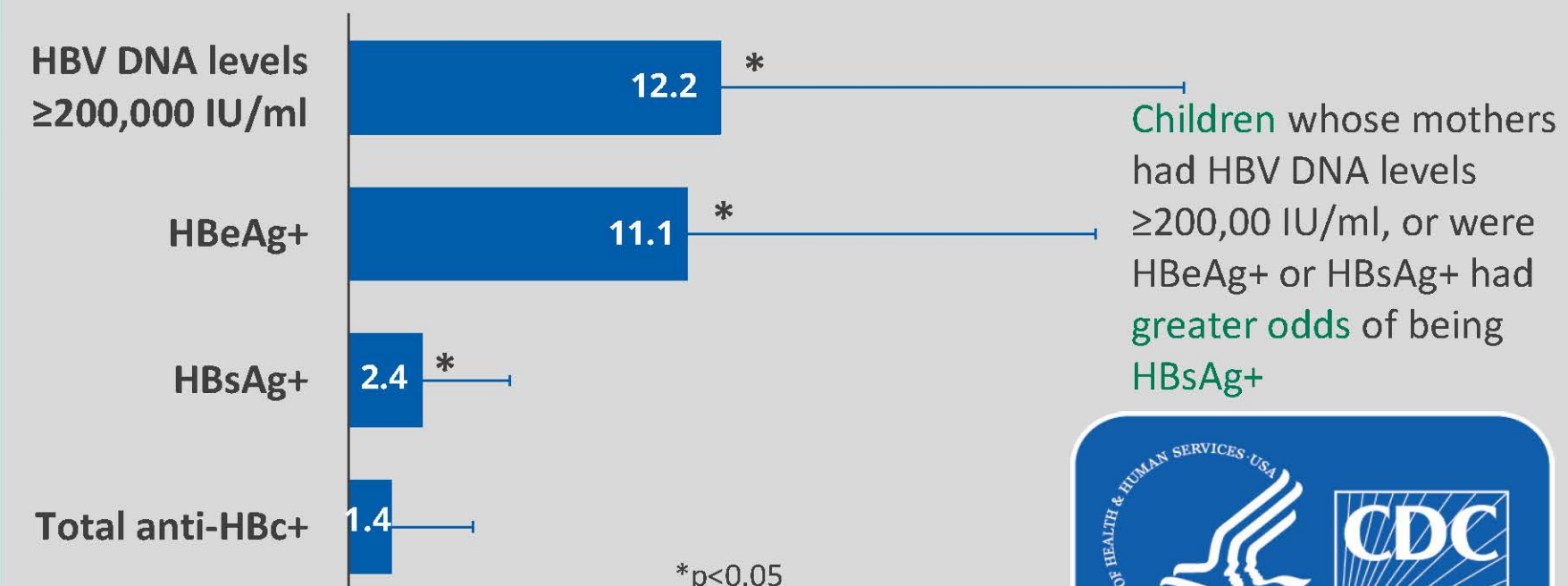
## HBV BURDEN WAS LOWER AMONG CHILDREN THAN MOTHERS



## HEPB3 VACCINATION COVERAGE WAS RELATIVELY HIGH AMONG CHILDREN



## MATERNAL HBV INFECTIVITY INDICATORS WERE ASSOCIATED WITH YOUNG CHILDREN BEING HBsAg+



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