

## High Rate of Dual Carriage of Hepatitis B Surface and Envelope Antigen in Gombe in Infants and Young Children, North-East Nigeria: 2000-2015

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**Abstract :** Introduction: Hepatitis B infection is endemic in sub-Saharan Africa, where transmission predominantly occurs in infants and children by perinatal and horizontal routes. The risk of chronic infection peaks when infection is acquired early. Materials and Methods: Records of Hepatitis B surface and envelope antigen results in Federal Teaching Hospital, Gombe between May 2000 and May 2015 were retrieved and analyzed. Results: Paediatric outpatient visits and in-patient admissions were 64,193 accounting for 13% of total. Individuals tested for Hepatitis B surface antigenaemia were 23,866. Children aged 0-18 years constituted 11% (2,626). Among children tested, males accounted for 52.8% (1386/2626) and females 47.2% (1240/2626). Infants contributed 65 (2.3%); 1-4 year old children 309 (11.7%); 5-9 year old children 564 (21.4%) and adolescents 1717 (65.1%). HbSAg sero-positivity was 18% (496/2626) among children tested. The highest number of children tested per year was in 2009 (518) and 2014 (569) and the lowest, in the first study year (62). The highest sero-positivity rate was in 2010; 21.7% (54/255). Children aged 0-18years accounted for 10.5% (496/4720) of individuals with Hepatitis B surface antigenaemia. Sero-positivity was 3.1% (2/65); 12.9% (40/309); 18.1% (102/564); and 20.5% (352/1717) in infants, children ages 1-4years, 5-9years and adolescents respectively. 2.5% (1/40) and 4% (1/25) of male and female infants respectively had HbSAg. Among children aged 1-4years, 15.1% (30/198) of males and 9.0% (10/111) of females were seropositive; 14.8% (52/350) and 22% (50/224) of male and female 5-9year old children respectively has HbSAg. 14.3% (138/943) of adolescent females had Hepatitis B surface antigenaemia. Adolescent males demonstrated the highest sero-positivity rate 27.6% (214/774). 97.3% (483/496) of children who demonstrated Hepatitis B surface antigenaemia were tested for dual carriage with the e antigen. Males accounted for 296/483 (63.1%) and females 187/483 (36.9%). Infants constituted 0.97% (4/482); children aged 1-4years, 5-9years and adolescents were 6.8% (33/483); 20.9% (100/483) and 71.3% (342/483) respectively. 17.6% (85/483) of children tested had HBe antigenaemia. Of these, males accounted for 69.4% (59/85). 1.2% (1/85) were infants; 9.4% (8/85) 1-4years; 22.3% (19/85) 5-9years and 68.2% (58/85) adolescents. 25% (1/4) infants; 24% (8/33) children aged 1-4 years; 19% (19/100) 5-9 year old children and 16.9% (58/342) adolescents had dual carriage. Infants and young children demonstrated the highest rate of dual carriage but were less likely to be tested for dual carriage 37/42 (88%) than their 5-9 year old 98% (100/102) and adolescent 342/352 (97%) counterparts. HB e antigen positivity rate was 45.4% (59/130) males and 36.0% (27/75) in females. Conclusion: Hepatitis B surface antigenaemia is high among adolescent males. Infants and young children who had HBSAg had the highest rate of envelope antigen carriage. Testing in pregnancy, vaccination programmes and prophylaxis need to be strengthened.

**Keywords :** children, dual carriage, Gombe, hepatitis B

**Conference Title :** ICVH 2016 : International Conference on Viral Hepatitis

**Conference Location :** London, United Kingdom

**Conference Dates :** February 25-26, 2016