

Hepatitis B transmission in early life in very remote Aboriginal communities in northern Australia

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Background: Chronic hepatitis B is a public health concern in Aboriginal communities of northern Australia with prevalence almost four times the non-Aboriginal population in the Northern Territory. Infection is suspected to occur in early life, however, the mode of transmission and vaccine effectiveness is not known in this population. WHO has set a target for hepatitis B elimination by 2030; elimination in this disproportionately affected population will require understanding of transmission and vaccine effectiveness.

Methods: We conducted the study at four very remote communities. We approached mothers who were Hepatitis B surface antigen (HBsAg) positive and gave birth between 1988 and 2013. We obtained hepatitis B serology, immunisation and birth details. If both mother and child had hepatitis B viral DNA detected, we performed viral whole genome sequencing.

Results: We included 20 mothers and 38 of their children. The median age of the children was 8.8 years (IQR 5.7 – 13.0). Of 33 children with results available, 8 (24.2%, 95%CI 11.1 – 42.3) were anti-hepatitis B core (anti-HBc) positive, 3 (9.1%, 95%CI 1.9 – 24.3) of whom were also HBsAg positive. Hepatitis B immunoglobulin (HBIG) had been given at birth in 29 (76.3%, 95%CI 59.8 -88.6) children and 26 children (68.4%, 95%CI 51.3 – 82.5) were fully vaccinated. Of the 3 children who were HBsAg positive, all had received HBIG at birth and two were fully vaccinated. Of the 5 who were anti-HBc positive and HBsAg negative, 4 had received HBIG at birth and one was fully vaccinated. Whole genome sequencing revealed one episode of mother to child transmission.

Conclusion: Although uncommon, there is ongoing transmission of hepatitis B in Aboriginal communities of northern Australia despite vaccination, and is likely occurring by both vertical and horizontal routes. Prevention will require ongoing investment to overcome the many barriers experienced by this population in accessing care.

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