Can we eliminate mother-to-child transmission of hepatitis B virus in Hong Kong by 2030?

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Hepatitis B virus (HBV) infection is an important public health issue. Hong Kong's universal HBV immunisation programme for newborns began in 1988.[1] This programme consists of administering hepatitis B immunoglobulin (HBIg) to infants born to hepatitis B surface antigen (HBsAg)–positive mothers, along with the first dose of the HBV vaccine at birth. The second and third doses of the vaccine are typically given in Maternal and Child Health Centres at 1 and 6 months, respectively. Notably, the proportion of HBsAg-positive pregnant women has steadily decreased in recent years, from 5.2% in 2016[2] to 2.4% in 2023 (unpublished data). Despite a 99.8% HBsAg screening rate among antenatal women, together with 99.5% coverage for both HBIg and HBV vaccinations in newborns of HBsAg-positive mothers,[2] a local study[3] of 641 HBsAg-positive pregnant women showed that the overall mother-to-child transmission (MTCT) rate remained 1.1%, indicating immunoprophylaxis failure. To align with the World Health Organization's (WHO) goal of eliminating viral hepatitis as a public health threat by 2030,[4] and specifically to achieve the WHO target of <0.1% HBsAg prevalence among 5-year-old children by that year, further reduction of MTCT of HBV has been targeted by the multidisciplinary Steering Committee on Prevention and Control of Viral Hepatitis, established in 2018 and chaired by the Director of Health and the Chief Executive of Hospital Authority.[5] As an obstetrics representative on the Steering Committee, the first author had the opportunity to present a literature review for use in formulating the action plan. Three strategies were considered: (1) maintaining the current approach of administering HBIg and HBV vaccinations to newborns of HBsAg-positive mothers, (2) conducting another randomised controlled trial on the use of tenofovir in further prevention of MTCT of HBV, and (3) implementing a universal programme to use tenofovir for this purpose. Although two major randomised controlled trials,[6,7] both published in *The New England Journal of Medicine*, appeared to reach conflicting conclusions, the MTCT of HBV rates were zero in both the Mainland China study[6] (n=92, per-protocol) and the Thailand study[7] (n=147). The safety of tenofovir in pregnancy has also been established. Rebound increases in alanine aminotransferase after tenofovir discontinuation were mild in most cases (acute hepatic exacerbation, defined as alanine aminotransferase elevation of >300 IU/L, occurred in 6% of the tenofovir group vs 3% of the control group[7]). The administration of antivirals to HBsAg-positive pregnant women with high HBV DNA levels has been recommended by the American Association for the Study of Liver Diseases, European Association for the Study of the Liver, Asian Pacific Association for the Study of the Liver, and Advisory Committee on Immunization Practices.[5] Despite these recommendations, the WHO had not made any recommendations by 2018. The Steering Committee ultimately decided to proceed with option 3.[5]

All HBsAg-positive pregnant women with an HBV viral load >200 000 IU/mL will receive an early referral to the corresponding hepatology clinic under Hospital Authority to discuss starting tenofovir (tenofovir disoproxil fumarate; United States Food and Drug Administration pregnancy category B[8]) by 28 weeks of gestation to further reduce the risk of MTCT of HBV. This programme began as a pilot at Queen Mary Hospital and Prince of Wales Hospital in the first quarter of 2020; it was expanded to Pamela Youde Nethersole Eastern Hospital, Kwong Wah Hospital, Queen Elizabeth Hospital, Princess Margaret Hospital, United Christian Hospital, and Tuen Mun Hospital in the third quarter of 2020.[5] In this issue of the *Hong Kong Medical Journal*, Cheung et al[9] published the 2024 Hong Kong College of Obstetricians and Gynaecologists guideline on antenatal screening and management of hepatitis B to prevent MTCT, summarising current clinical practices in Hong Kong. This evidence-based guideline aligns with the core strategy of reducing MTCT risk in the Hong Kong Viral Hepatitis Action Plan 2020-2024.[10] Additionally, the guideline addresses important

issues such as immunoprophylaxis failure, antenatal management, and the indications for and duration of continued antiviral treatment after delivery. We strongly encourage our readers to incorporate the recommendations of the Hong Kong College of Obstetricians and Gynaecologists into their clinical practice.

Between September 2020 and December 2022, a total of 2151 HBsAg-positive pregnant women attended Hospital Authority antenatal clinics.[11] Among them, 328 (15.2%) had a high viral load (HBV DNA >200 000 IU/mL) and were referred to hepatologists, and 314 (95.7%) of these pregnant women attended hepatology clinics. After consultation with hepatologists, most women (n=292, 93.0%) accepted tenofovir prophylaxis.[11] Among those who refused tenofovir after consultation, common reasons included concerns about potential side-effects on the fetus and fears of hepatitis flare-ups after postpartum discontinuation of tenofovir.[11]

A key aspect of outcome assessment is post-vaccination serology testing, which will be performed in infants after they complete the full course of vaccination. Infants born to HBsAg-positive mothers will be recruited from Maternal and Child Health Centres and referred to the Hong Kong Children's Hospital for blood tests. We anticipate favourable results, confirming the elimination of MTCT of HBV in Hong Kong by 2030!

Author contributions

Both authors contributed equally to the development of the manuscript. Both authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

Both authors have declared no conflicts of interest.

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