



Editorial

Testing for hepatitis in view of treatment: A universal health coverage service that can advance elimination of mother-to-child transmission of hepatitis B virus

The WHO estimated that globally, in 2015, 257 million people were living with chronic hepatitis B virus (HBV) infection, and 71 million people with chronic hepatitis C virus (HCV) infection. The WHO further estimated that viral hepatitis caused 1.4 million deaths in 2015¹. Most viral hepatitis deaths are due to cirrhosis and hepatocellular carcinoma secondary to chronic HBV and HCV infections¹. In 2016, the World Health Assembly endorsed the Global Health Sector Strategy (GHSS) on viral hepatitis that called for elimination of hepatitis as a public health threat by 2030². Viral hepatitis elimination is defined as a 90 per cent reduction in incidence and a 65 per cent reduction in mortality, compared to the 2015 baseline. To eliminate viral hepatitis as a public health threat, the GHSS focuses on five core interventions that need to be implemented at a sufficient level of service coverage. The first four core interventions address prevention. These are (i) three-dose hepatitis B vaccination for infants, (ii) prevention of mother-to-child transmission of HBV, (iii) blood and injection safety, and (iv) comprehensive harm reduction services for people who inject drugs². The WHO has been recommending these four interventions for a number of years, even though there are coverage gaps, particularly for the hepatitis B birth dose in the African Region and for harm reduction in persons who inject drugs. The fifth core intervention represented a substantial innovation in the field of hepatitis for the WHO when the GHSS was adopted in 2016. It refers to providing access to HBV and HCV testing in view of treatment². Following the endorsement of the GHSS on viral hepatitis, the WHO worked to ensure that testing in view of treatment met the criteria required for inclusion in the Universal Health Coverage (UHC) packages. First, testing for HBV and HCV in view of treatment is an effective, high-impact

intervention recommended in the WHO evidence-based guidelines³⁻⁵. Second, the cost of scaling up to the level of elimination represents about one per cent of the ambitious UHC scenario⁶. Third, testing in view of treatment as per the WHO guidelines is highly cost-effective⁷. Fourth, it can be integrated to primary care, and to various testing and treatment services including HIV and tuberculosis⁸. Fifth, a WHO monitoring and evaluation framework can track progress along the result chain⁹. Overall, testing in view of treatment mortality, but also contributes to prevention through suppression of sources of infection. This phenomenon referred to as “treatment as prevention” takes place in the general population. It also takes place among pregnant women to prevent vertical mother-to-child transmission of HBV. The foundation of the prevention of mother-to-child transmission of HBV consists of universal immunization of infants against HBV, including a timely birth dose¹⁰. However, countries that have achieved high immunization coverage can consider additional interventions through testing pregnant women for HBV infection in view of prophylaxis with antivirals¹¹. This intervention can also be integrated with broader services for testing and treatment including interventions to eliminate mother-to-child transmission of HIV and syphilis¹².

The WHO South-East Asia Region accounts for 39 and 7 per cent of the global prevalence of HBV and HCV infection, respectively, and for 29 per cent of the global mortality¹. For HBV infection, in the pre-vaccination era, many countries used to be highly endemic (prevalence >8%), while some others had an intermediate endemicity profile (prevalence 2-8%). For HCV infection, most countries are around one per cent prevalence of infection, with occasional

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hotspot of high prevalence at the subnational level, most often because of unsafe healthcare injection practices¹. Of the 11 Member States, nine (80%) had a national hepatitis plan in 2020. The cost of WHO pre-qualified testing and treatment commodities has fallen considerably in recent years. In 2019, the best market price for HBV treatment was US\$ 23 per year (personal communication with UNDP; January 2020). The HBV DNA test, critical to long-term monitoring, can be procured at an estimated unit cost of US\$ 20. The large-scale procurement of diagnostic and treatment commodities for HIV can serve as a basis to push for parity in viral load testing costs across the disease areas. For HCV, the best market price for curative treatments was US\$ 60 per cure in 2019¹³. The HCV RNA test (which confirms HCV chronic infection and cure) was US\$ 9.80 ex-works per test, amounting to around US\$ 20 for diagnostic assessment and test for cure per patient¹³. Despite these opportunities to access commodities, in 2019, progress in terms of testing and treatment remained limited in the South East Asian Region. Of those 39 million with HBV infection and 10 million with HCV infection, a minority had been diagnosed and treated. As per the elimination goals, 90 per cent of those infected should be diagnosed, and of those diagnosed, 80 per cent should be treated. These targets might require testing in the general population. As a first step, focused testing among blood donors, persons with chronic liver disease and persons reporting high risk exposures could be more cost-effective and feasible⁷. Besides the health benefit to prevent mortality, testing and treatment for hepatitis could also advance the elimination of mother-to-child transmission of HBV in the Region. An overview of the situation of the countries of the Region with respect to the prevalence of HBV infection in children under five years of age and service coverage indicators points to a heterogeneous situation that calls for different country-specific interventions (Table). In two countries, the prevalence of HBV infection in children under five years of age was ≥ 2 per cent. There, the expanded programme on immunization (EPI) needs to reach more children with three doses of vaccine, including timely birth dose. In none of the countries, the prevalence of HBV infection in children under five years of age was between two and one per cent. In five countries, the estimated prevalence of HBV infection in children under five years of age has fallen under one per cent although the attainment of the one per cent goal has not yet been verified by WHO²³. These countries may want to conduct biomarker surveys²⁴

and/or prepare their validation dossier so that their achievement is validated. In four countries, the estimated prevalence of HBV infection in children under five years of age has fallen under one per cent, and this achievement has been verified by the WHO²³. These countries may want to consider testing of pregnant women in view of peripartum prophylaxis so that they move forward to the 2030 prevalence target of 0.1 per cent²⁵.

India, with its large population and population diversity, reproduces the opportunities and challenges that can be seen in the Region in terms of testing and treatment for hepatitis and prevention of mother-to-child transmission of HBV. For HBV, the estimated prevalence in the pre-vaccine era was 1.8 per cent²⁶ but with large variations and pockets of high prevalence among ethnic minorities^{27,28}. In 2003, hepatitis B vaccine was introduced in the EPI. While WHO estimates that in 2015 the national prevalence of HBV infection in children under five had fallen now at 0.51 per cent, there are probably a number of pockets where pre-existing high endemicity and low vaccination coverage combine to lead to higher prevalence of HBV infection in children²⁶. With respect to HCV infection, the prevalence is also heterogeneous, ranging from 1 to 51 per cent according to populations, regions and studies²⁹. In 2018, India launched a fully funded National Viral Hepatitis Control Programme that started with HCV to be later complemented with HBV programme in 2019³⁰. To secure availability of testing and treatment commodities, the programme engaged proactively in procurement to achieve low prices, reaching US\$ 30 approximately for a yearly treatment for HBV infection and US\$ 40 for an HCV cure in non-cirrhotic persons. The national plan also proposes to integrate testing and treatment for hepatitis as a part of the National Health Mission, under a UHC model³⁰. Given the progress of India on the front of elimination of mother-to-child transmission of HIV and syphilis at subnational levels in some high-prevalence States, a component of prevention of mother-to-child transmission of HBV could be considered, particularly in highly endemic areas where women of childbearing age infected with HBV are more likely to be replicating the virus at a higher level. Hence, overall, India is well placed from a programme structure and commodity access point of view to make substantial progress towards hepatitis elimination, including testing in view of treatment and prevention of mother-to-child transmission of HBV. Given the heterogeneity

Table. Indicators assessing the situation in terms of prevention of hepatitis B virus (HBV) infection at birth and in the first years of life, WHO South-East Asian Region

Country	HBsAg prevalence in children <5 yr of age (2019 working estimate) ^v (%)	HBsAg prevalence in the general population (2015) [†] (%)	HBV 3 rd dose coverage (2019) [‡] (%)	Timely birth dose coverage (2019) [§] (%)	Antenatal care coverage (at least one visit, 2016-2018) [§] (%)	Proportion of birth by skilled attendants (2016-2018) [@] (%)	Verified by the WHO as having reached the 2020 one per cent target [#]	Programme for the prevention of mother-to-child transmission of HBV through testing in view of prophylaxis [*]
Indonesia	4.2	2.43	85	84	97.5	94	No	No
Myanmar	2	4.18	90	17	80.7	60	No	No
Timor Leste	0.87 ^b	2.00	83	70	84.4	57	No	No
India	0.51 ^b	1.65	91	56	79.3	81	No	No
The Democratic Republic of Korea	0.5	4.40	97	98	99.5	100	No	No
Nepal	0.3	0.87	93	N/A	83.6	58	Yes	No
Thailand	0.2	1.36	97	99	98.1	99	Yes	Yes
Maldives	0.2	1.43	99	99	98.7	96	No	No
Bangladesh	0.05	4.00	98	N/A	81.9	53	Yes	No
Sri Lanka	0.01	2.04	99	N/A	98.8	100	No	No
Bhutan	0.3 ^c	4.29	97	86	N/A	96	Yes	No

N/A, not available. *Source:* Refs [†]11, ^v14, ^b15, ^c16, [†]17, [†]18, [§]19, [§]20, [@]21, [#]22

and diversity of the endemicity and programmatic scenarios, the country has a lot to learn from the Region and a lot to bring to the Region. These policy dialogues are at the heart of the work of the WHO so that India, the South East Asian Region and the world achieve hepatitis elimination in a context of UHC.

Conflicts of Interest: None.

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