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REVIEW

Global HBV disease burden and current care gaps

Devin Razavi-Shearer

The Polaris Observatory, Center for Disease Analysis Foundation, Lafayette, Colorado, USA

Correspondence
Devin Razavi-Shearer, 1120 W South Boulder Rd, Suite 102, Lafayette, CO 80026. USA.
Email: drazavishearer@cdafound.org

GLOBAL DISEASE BURDEN

In 2022, we published an updated global analysis of HBV (Figure 1) that also described the uncertainty in national estimates. We are able to estimate the 2023 burden, cascade of care, and the number of countries expected to meet the 2030 elimination targets based on the current levels of treatment and diagnosis, the uncertainties described in our paper will carry to the 2023 estimates as well.[1] Building upon that analysis, we can estimate the 2023 burden, cascade of care, and the number of countries expected to meet the 2030 elimination targets based on the current levels of treatment and diagnosis.[2] This was achieved through a modified Delphi process that built expert consensus on the inputs necessary for the fully dynamic disease burden and transmission PRoGReSs model.[2]

In 2023, we estimate that there were 253 million people living with HBV globally, representing a prevalence of 3.2%. Of these, 5.4 million were aged 5 years old or younger corresponding to an early childhood prevalence of 0.7%.

The prevalence of HBV is heavily concentrated, with over 95% of all infections and 99% of infections among children aged 5 years and younger occurring in low-income and middle-income countries (Figure 2).

The overall and the under 5-year-old shares of global infection can be compared to the strength and impact of prevention of mother-to-child transmission measures. High and upper middle-income countries have historically had strong prevention of mother-to-child transmission programs, and they have been able to greatly reduce their share of infections in early childhood when compared to their overall share of infections (Figure 2). However, lower middle-income and low-income countries have seen increases in their share largely due to the lack of availability of timely birth doses.

These trends can also be observed at the World Health Organization regional level (Figure 2). The majority of people living with HBV, 62.7%, live in Southeast Asia and the Western Pacific Region (SEARO and WPRO), but the majority of early childhood infections are in the African region (AFRO).

While progress has been made in prevention efforts, HBV-related morbidity and mortality continue to increase globally.[1,3,4]

CURRENT HBV ELIMINATION PROGRESS

Based on the latest vaccination data, 95 countries are currently meeting the 2030 target of 90% or greater three-dose coverage and 53 countries are meeting the 90% target for timely birth dose coverage.[5] While these achievements should be lauded, it must be stated that it is imperative that these programs, at minimum, continue at their current high levels of coverage.

In 2023, we estimate that there are already 73 countries that have met the 2030 target of $\leq$ 0.1% HBsAg prevalence among children aged 5 and younger. There are also 39 countries estimated to already have met the mortality target of less than 4 deaths due to HBV per 100,000 individuals. It must be noted that most countries meeting the absolute mortality target are doing so because of historically and currently low HBV prevalence and not as the result of screening and treatment programs.

If the current levels of prophylaxes measures and treatment are maintained through 2030, we estimate that there will be 88 countries meeting the $\leq$ 0.1% HBsAg prevalence among children aged 5 years and younger (Figure 3). There will be 41 countries estimated to meet both the prevalence and the absolute mortality target (Figure 4).

Unfortunately, no countries are currently meeting or expected to meet the programmatic targets of 90% of

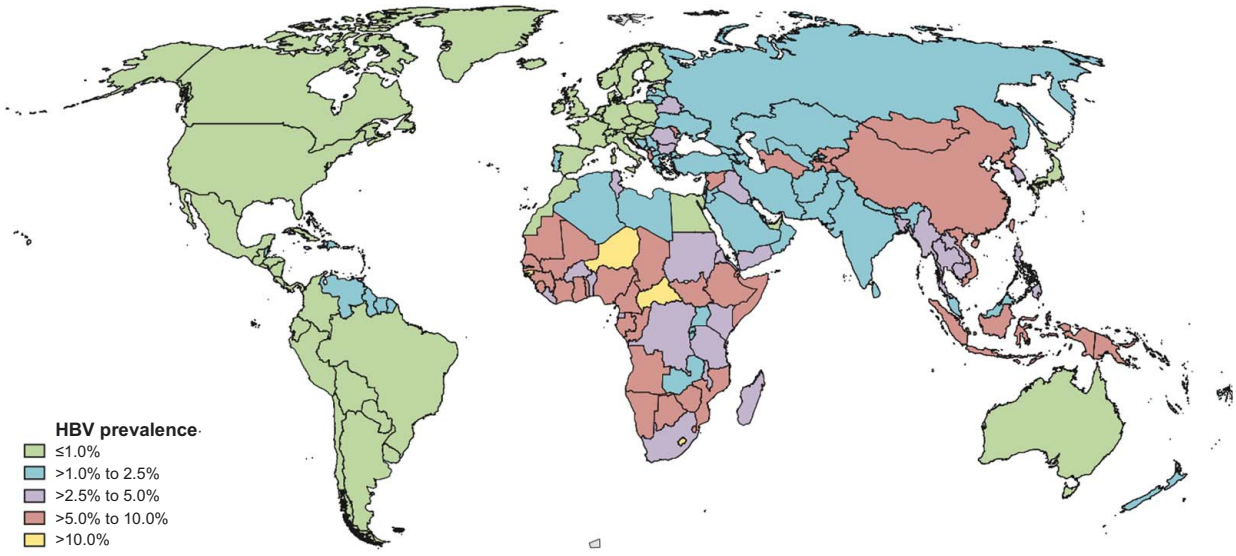

FIGURE 1 Global Prevalence of HBV, 2022.

the infected population diagnosed and 80% of the diagnosed and eligible population being on treatment.

CURRENT CASCADE OF CARE AND SOLUTIONS

Of the 253 million people living with HBV, it is estimated that 33% (83 million) are eligible for treatment, and that of those eligible, 8% (6.8 million) are on treatment (Figure 5). Currently, 15% (37 million) of total HBV infections have been diagnosed, and of these, 20 million are estimated to be eligible for treatment since individuals with advanced liver disease (and treatment eligible) are more likely to be diagnosed. Of the total diagnosed population, 6.8 million are on treatment corresponding to 34% of diagnosed and eligible being on treatment globally.

The highest levels of diagnosis and treatment are found in the high-income countries, which also have the lowest prevalence, with 2023 rates estimated to be 45% and 25% respectively (Figure 6). This is in stark contrast to lower-middle–income and low-income countries where the diagnosis rate is under 10% and the treatment rate is less than 5% (Figure 6).

The cascade of care for HBV has remained stubbornly low, and it is clear that the current strategies are not working. One problem is that the treatment guidelines are written in high-income countries and assume capacities that do not exist in most middle-income and low-income countries. There must be a set of guidelines that meets countries where their capacities currently are to allow people living with HBV to be treated wherever they may live.

China, for example, expanded treatment eligibility criteria to include anyone who is HBsAg+ and DNA+ irrespective of viral load or ALT levels.[6] HBsAg test is sufficient to start treatment in areas where access to viral load testing is not available. This is expected to greatly expand access. Several other countries have also

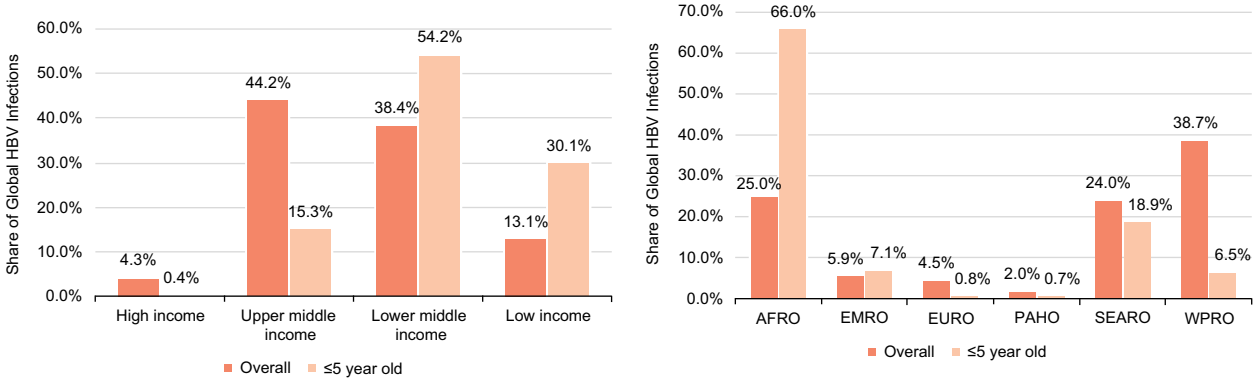

FIGURE 2 Share of total and early childhood HBV infections by World Bank Group and WHO Region, 2023.

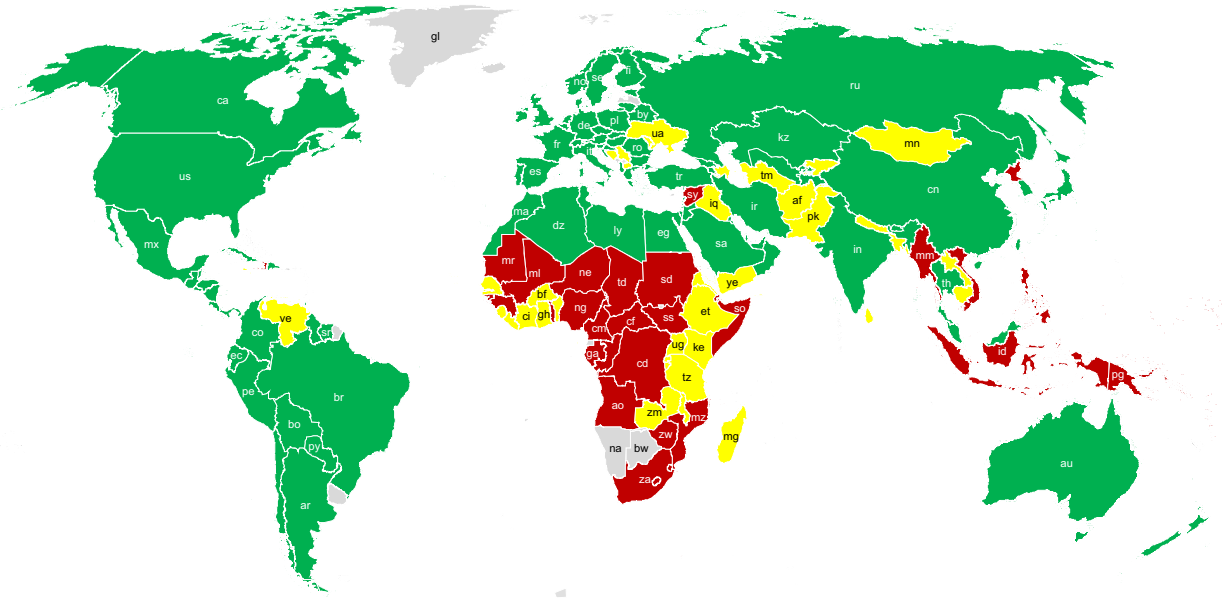

FIGURE 3 Countries achieving HBV ≤ 5-year-old HBsAg prevalence elimination targets.

changed their national guidelines to expand access to treatment using a public health approach, particularly in the realm of prevention of mother-to-child transmission. As hepatitis B immunoglobulin is not a realistic intervention in most of the world, some countries (Malawi and Suriname) have begun to treat all pregnant women found to be HBsAg+ to prevent mother-to-child transmission.

One intervention that has been shown to increase appointment follow-ups, laboratory monitoring, and treatment is a patient-centered education program.[7] Additional research is necessary to observe if there can be a similar impact from mass media campaigns aimed at increasing education at the population level specific to and transcending risk groups.[8]

In the coming year, it is expected that the World Health Organization, along with all the major international liver associations, will be updating their HBV treatment guidelines. We hope that they will be able to take a page from China and overcome the zero-risk bias inherent in the current guidelines.

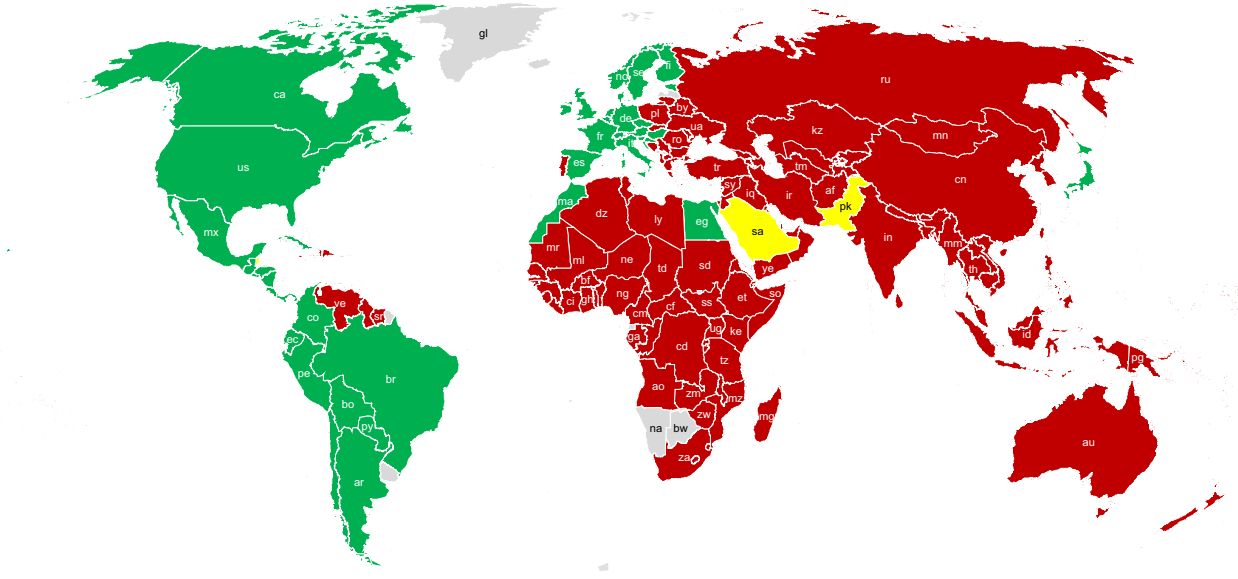

FIGURE 4 Countries achieving HBV ≤ 5-Year-Old HBV prevalence and absolute HBV mortality elimination targets.

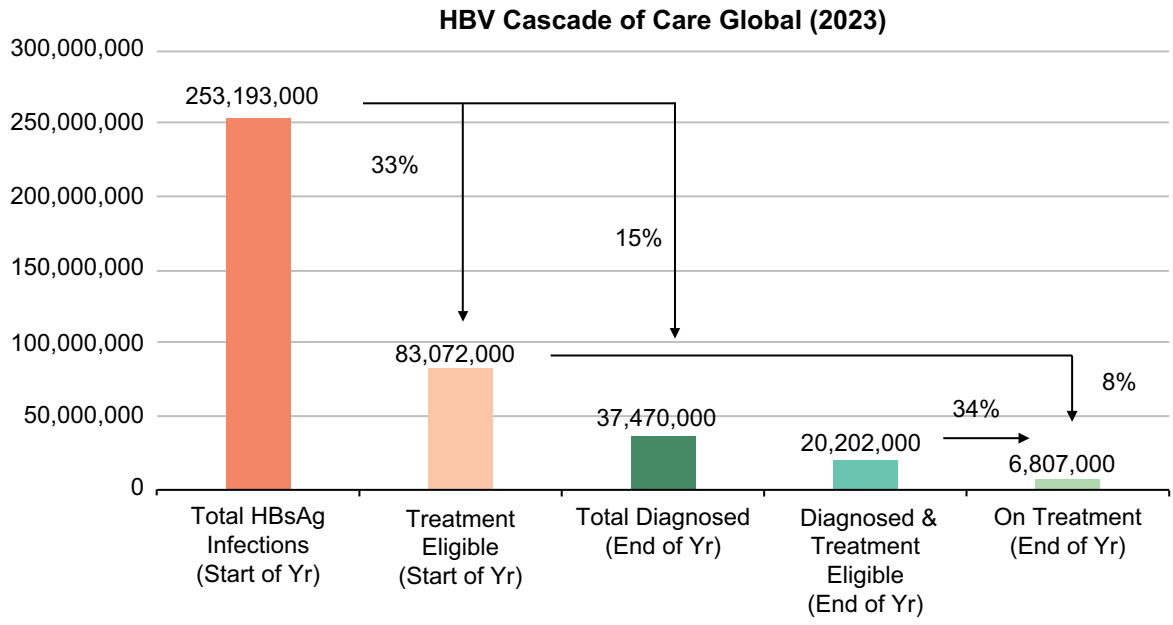

FIGURE 5 HBV Global cascade of care, 2023.

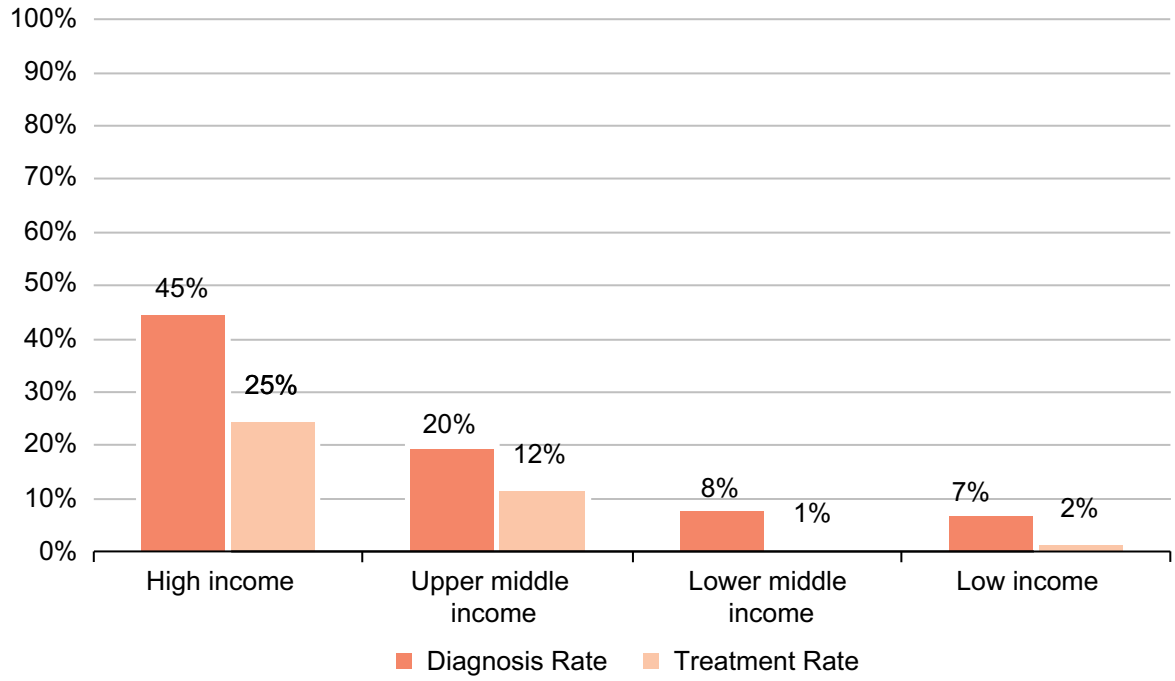

FIGURE 6 Diagnosis and treatment rates by World Bank Income Level, 2023.

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CONFLICTS OF INTEREST

Devin Razavi-Shearer is an employee of the Center for Disease Analysis Foundation.

ORCID

Devin Razavi-Shearer https://orcid.org/0000–0003–4135–1053

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