



Disease Burden of Hepatitis B in the Kyrgyz Republic: A Focus on Prevention

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BACKGROUND

Central Asian countries have historically had higher levels of hepatitis b virus (HBV) disease burden and the Kyrgyz Republic is no different. Currently, there is a renewed sense of urgency regarding HBV and the potential to further reduce incidence nationally.

OBJECTIVE

The aim of this study is to quantify the HBV disease burden in the Kyrgyz Republic and to examine the impact of prevention measures through modeling.

METHODS

A literature review was conducted and then expert consensus regarding inputs was built at an in-country meeting in September 2017. A dynamic country-level transmission and disease burden model was used to estimate the impact of vaccination, Hepatitis B immune globulin (HBIG), treatment of mothers, aging and disease progression and mortality in the infected population. A scenario was then developed that would meet the Global Health Sector Strategy (GHSS) goal for hepatitis B prevalence among five year olds in 2030, $\leq 0.1\%$, combined with a catch-up vaccination program that would cover 98% of 20-29 year olds over a 7 year period starting in 2018.¹

Table 1. 2016 Kyrgyz-model inputs

Kyrgyz Model Parameters (2016)	Value
Total HBsAg+ Population	374,000
Three Dose Coverage	96%
Birth Dose Coverage	97%
HBIG Coverage	0%
Anti-Viral Treatment of Mothers Coverage	0%
General Population Treatment Rate	1%

RESULTS

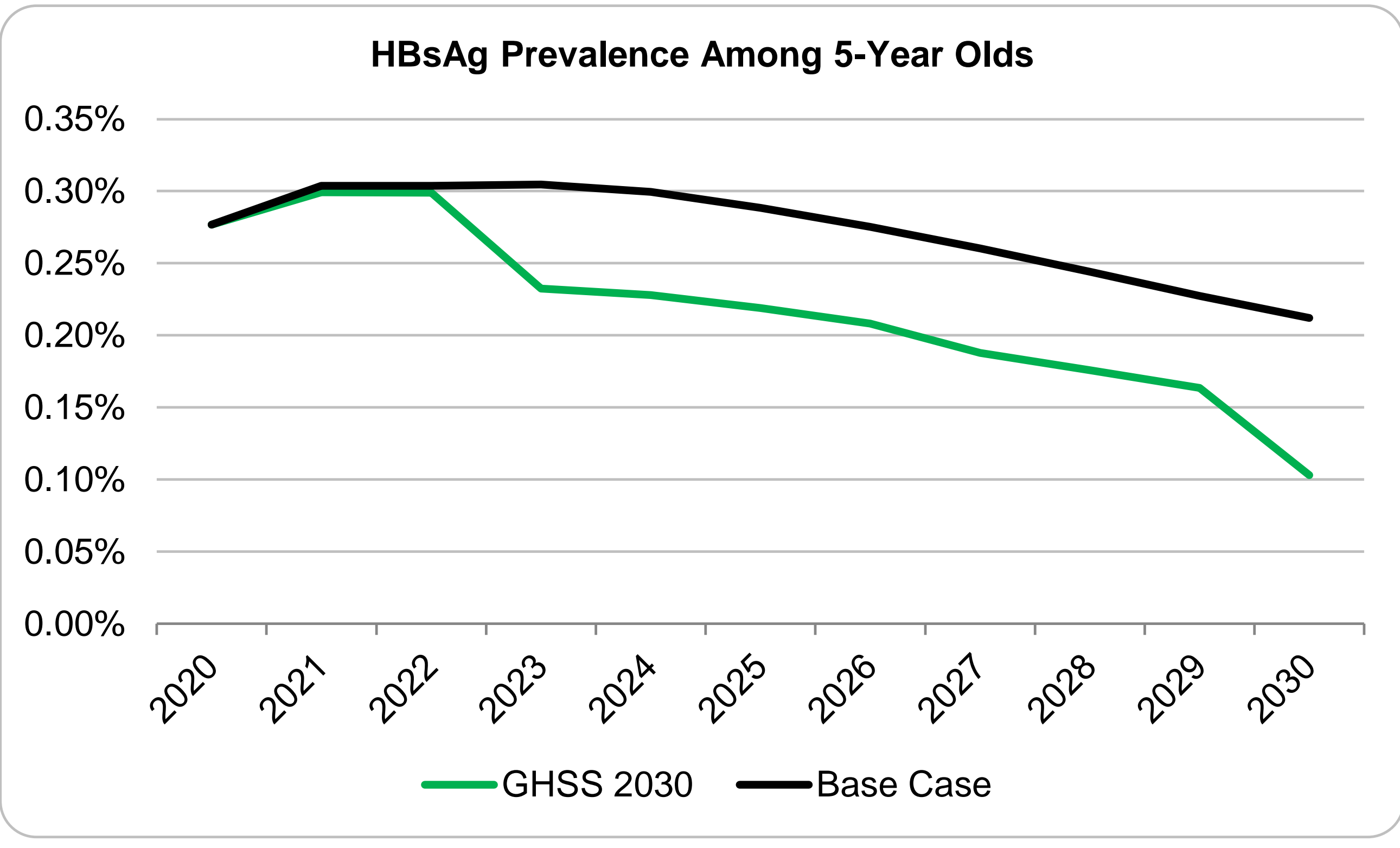
Base Case

- In 2015, it was estimated that 9% (4.4-13.2%) of the adult population was HBsAg+. When expanded to the total population it was estimated that there were 374 000 (UI: 245 000-504 000) infected individuals in 2016 (Table 1).
- It is estimated that at least 25% of those infected with HBV are also infected with hepatitis delta. Currently the Kyrgyz Republic has high levels of vaccination, 97% of infants receiving the first dose within 24 hours and 96% of one year olds having received the complete HBV vaccination schedule.
- Without intervention, it is estimated that in 2030 the HBsAg prevalence among five year olds would approach 0.2% (Figure 1).

GHSS 2030

- In order to meet the GHSS target of $\leq 0.1\%$ in 2030 a scenario was developed in which, starting in 2018, 25% of infants born to HBsAg+ mothers who received birth dose would also receive HBIG. This was kept constant through 2030.
- In addition, from 2018-2021, 25% of mothers with a high viral load ($\geq 20\ 000$ IU/mL) received peripartum anti-viral therapy, increasing to 30% in 2022, and 65% in 2025 and beyond. Further, a national catch-up vaccination program targeting 20-29 year olds was started in 2018, covering 98% of this cohort by 2025.
- This scenario resulted in a prevalence of 0.1% among five year olds in 2030, as well as an estimated 10 900 acute and 1 900 chronic cases averted (Figure 2).

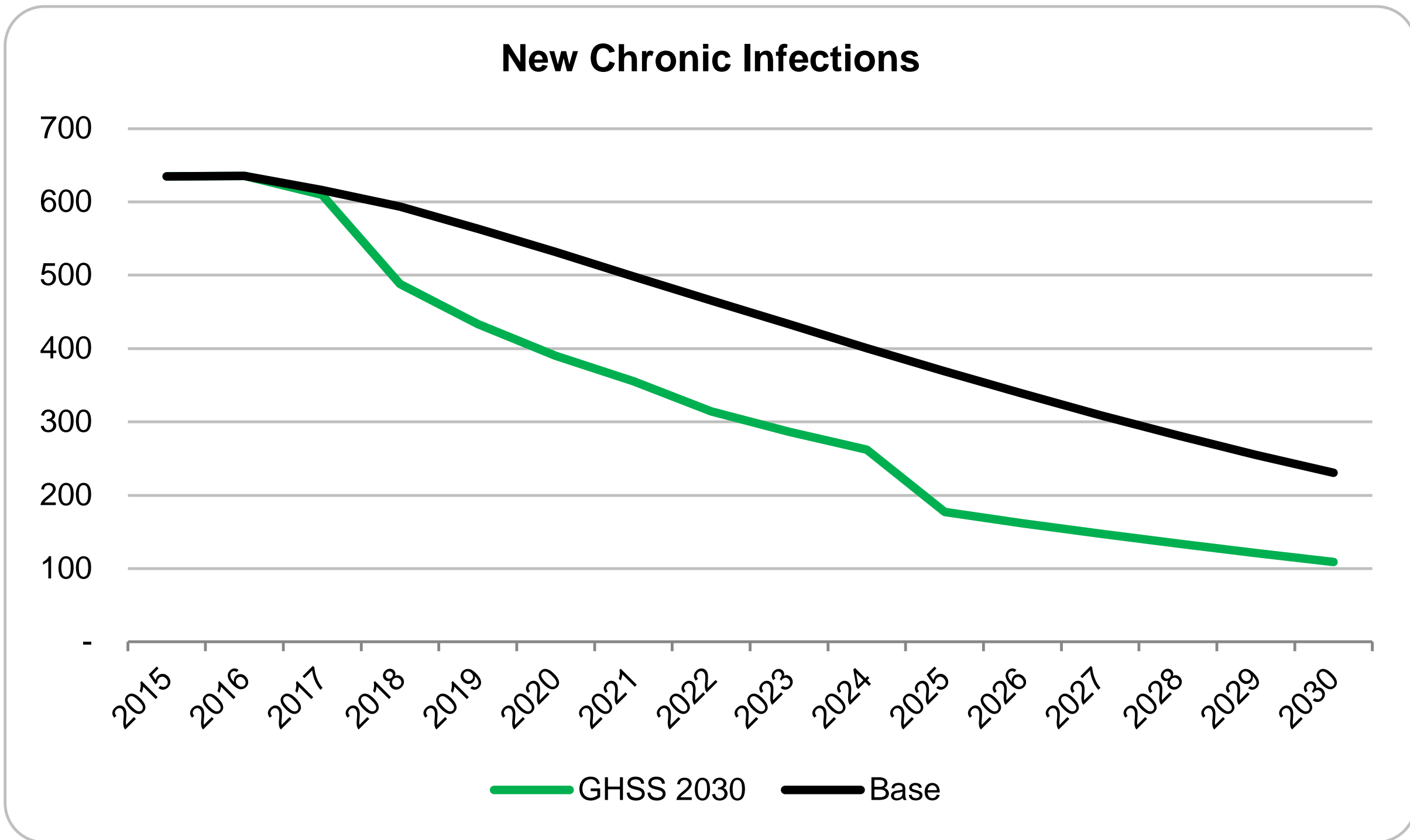
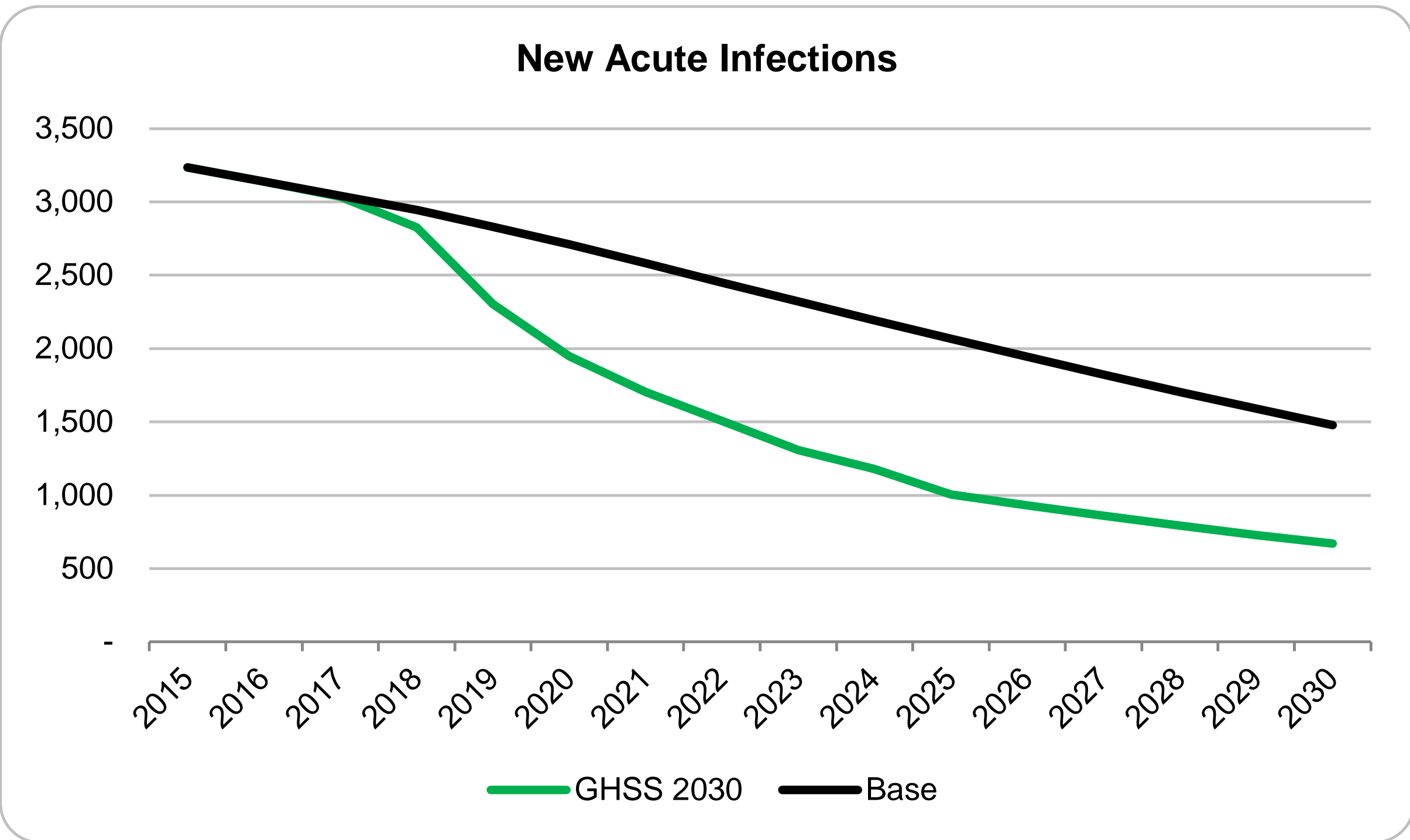
Figure 1. HBsAg Prevalence Among 5-Year Olds, Kyrgyz Republic 2020-2030



CONCLUSIONS

Currently, there is no cure for HBV or HDV, and the current treatment for HDV is not very effective. Thus, prevention of new cases is imperative in reducing the future disease burden in the Kyrgyz Republic. The catch-up vaccination strategy targeting the generation born prior to the advent of universal vaccination will help mitigate future infections in this age group. This strategy would require the screening of pregnant women, but only 25% of those found positive would require their infants to receive HBIG, and the antiviral treatment of high viral load pregnant women can increase along with the health system capacities from 2018 to 2025.

Figure 2. Annual Acute and Chronic Infection, Kyrgyz Republic 2015-2030



REFERENCES

1. Global Health Sector Strategy on Viral Hepatitis 2016-2021. Geneva: World Hepatitis Organization; 2017

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