

# Estimates and projection of disease burden and economic analysis for hepatitis B in Viet Nam

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## Background

The Global Burden of Disease estimated over 31,000 hepatitis-related deaths, mainly from cirrhosis and hepatocellular carcinoma (HCC), in Viet Nam in 2013. There has been insufficient attention to viral hepatitis management given the limited national data on viral hepatitis disease burden. The modelling exercise aims to estimate and project the disease burden of hepatitis B virus (HBV) infection and to conduct economic analysis to inform national planning and advocate for further investment to achieve the target of elimination of viral hepatitis as a public health threat by 2030.

## Method

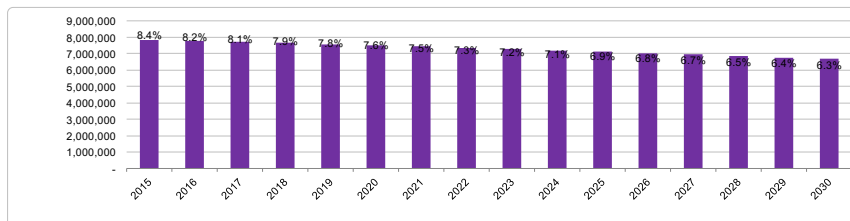
We used the PRoGrEs Model developed by Center for Disease Analysis (US) which applies the Markov disease progression model. We estimated and projected the annual number and prevalence of chronic hepatitis B and of sequela by sex and age, including compensated and decompensated cirrhosis, HCC and deaths. For the economic analysis, we estimated the cost, disease burden reduction and gain in disability-adjusted life years (DALYs) for achieving the elimination goals by 2030 with the scenario of diagnosing 90% of people living with HBV and treating 80% of the diagnosed. Input data were obtained from literature review, programme data or expert consensus.

## Results

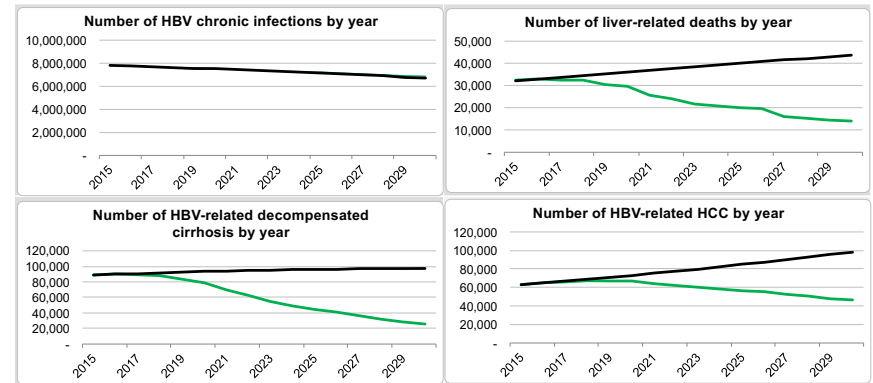
The modeling results confirmed high burden of hepatitis B in Viet Nam in 2017: 7,697,525 chronic HBV infections (or 8.1% prevalence); 90,704 decompensated cirrhosis; 66,608 HCC; and 33,481 HBV-related deaths. HBV infections were projected to decline to 6.7 million in 2030. However, if baseline interventions remain the same between 2015 and 2030, the number of HCC, decompensated cirrhosis and HBV-related deaths are projected to increase by 57%, 10% and 37%, respectively. The economic analysis indicated that scaling up prevention, testing and treatment for HBV could avert 75,000 new infections and 32,500 HCC and save 225,230 lives and 2.88 million DALYs. An investment of 39.1 billion USD is required during 2015-2030 to achieve these targets as compared to 41.7 billion USD, which will be spent if we continue the current program. The latter cost includes the cost of advance liver disease.

**Table 1. Estimated Disease Burden (2017) – Base Scenario**

Total # with HBV chronic infection	7,697,525
Decompensated cirrhosis	90,704
HCC	66,608
Liver-related death	33,481



**Figure 1.** Estimated prevalence of HBsAg by years



**Figure 2.** Trend of chronic HBV infection, decompensated cirrhosis, HCC and liver-related death – WHO Global Elimination Targets 2030 scenario

**Table 2.** Summary of HBV modeling and analysis of policy scenarios

Output (2015-2030)	Base	WHO Global Elimination Targets 2030
Total cost (billion USD)	41.7	39.1
# liver-related death averted	-	225,185
# of infection saved	-	75,007
# of HCC averted	-	205,775
# DALY saved (million)	-	2.88
Cost per DALY saved (USD)	-	\$1,128

## Conclusion

Given the high disease burden of hepatitis B in Viet Nam, rapid scale up of hepatitis B prevention, care and treatment is urgently needed. Liver-related deaths, HCC & decompensated cirrhosis will increase under the current level of investment. The model show that scale-up of hepatitis B treatment will achieve be highly cost-effective. The findings of the modelling exercise are important for raising awareness for policy makers and advocating for resources.

## Acknowledgement

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