



# The current and future disease burden of hepatitis B virus in the general population and among five year-olds in the Eastern Mediterranean Region

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## INTRODUCTION

- Accurate national estimates of chronic hepatitis B (CHB) are needed to devise national and regional strategies in the Eastern Mediterranean Region (EMRO).
- Systematic reviews and meta-analyses published in the last 5 years have signaled a global decrease in prevalence compared to earlier estimates [1-3]. While these findings reflect the implementation of the many vaccination programs around the world among infants, these analyses do not specifically factor in vaccination rates over time.

## AIM

- This study quantifies the prevalence of CHB in the EMRO region among the general population and five year olds, from 2016 through 2030, using historical prevalence estimates combined with country level modeling while accounting for the impact of prophylaxes practices and treatment on CHB prevalence as well as morbidity and mortality.

## METHOD

- A literature review was conducted for hepatitis B surface antigen (HBsAg) prevalence among the general population (by age) and e-antigen prevalence among women of child bearing age.
- Additional data sources were identified manually through references in other articles, government and NGO reports and communication with local experts in more than half of the EMRO countries.
- A dynamic country-level transmission and disease burden model was used to estimate the impact of vaccination, hepatitis B immune globulin, treatment of mothers as prophylaxis, treatment in the general population, aging, disease progression and mortality in the infected population in each country with data.
- Regional averages were applied to populations of countries without available data, and results were then aggregated to form regional estimates.

## RESULTS

Figure 1. CHB Cases by EMRO Country, 2016 and 2030

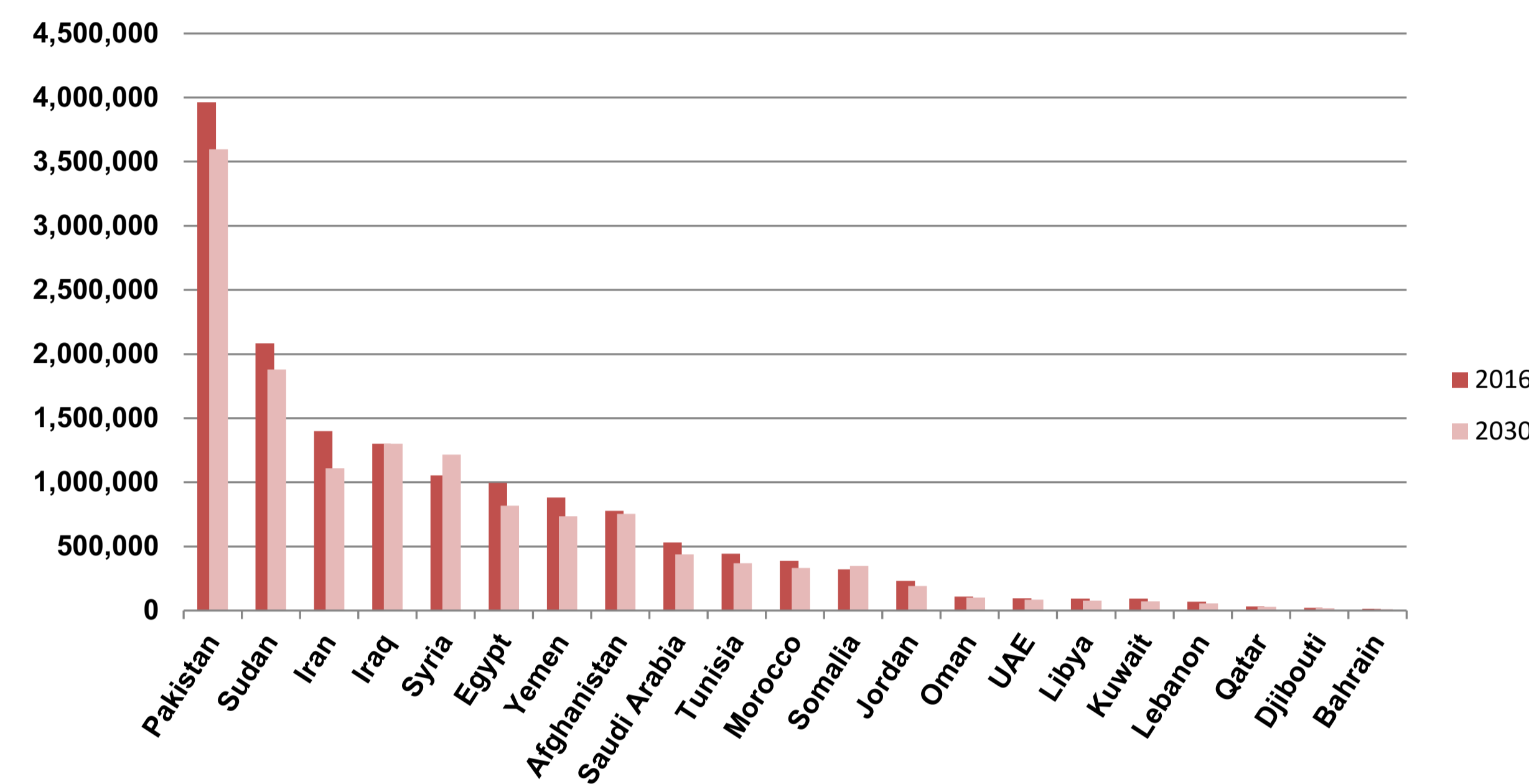


Figure 3. HBV-Related Morbidity and Mortality, 2016 and 2030

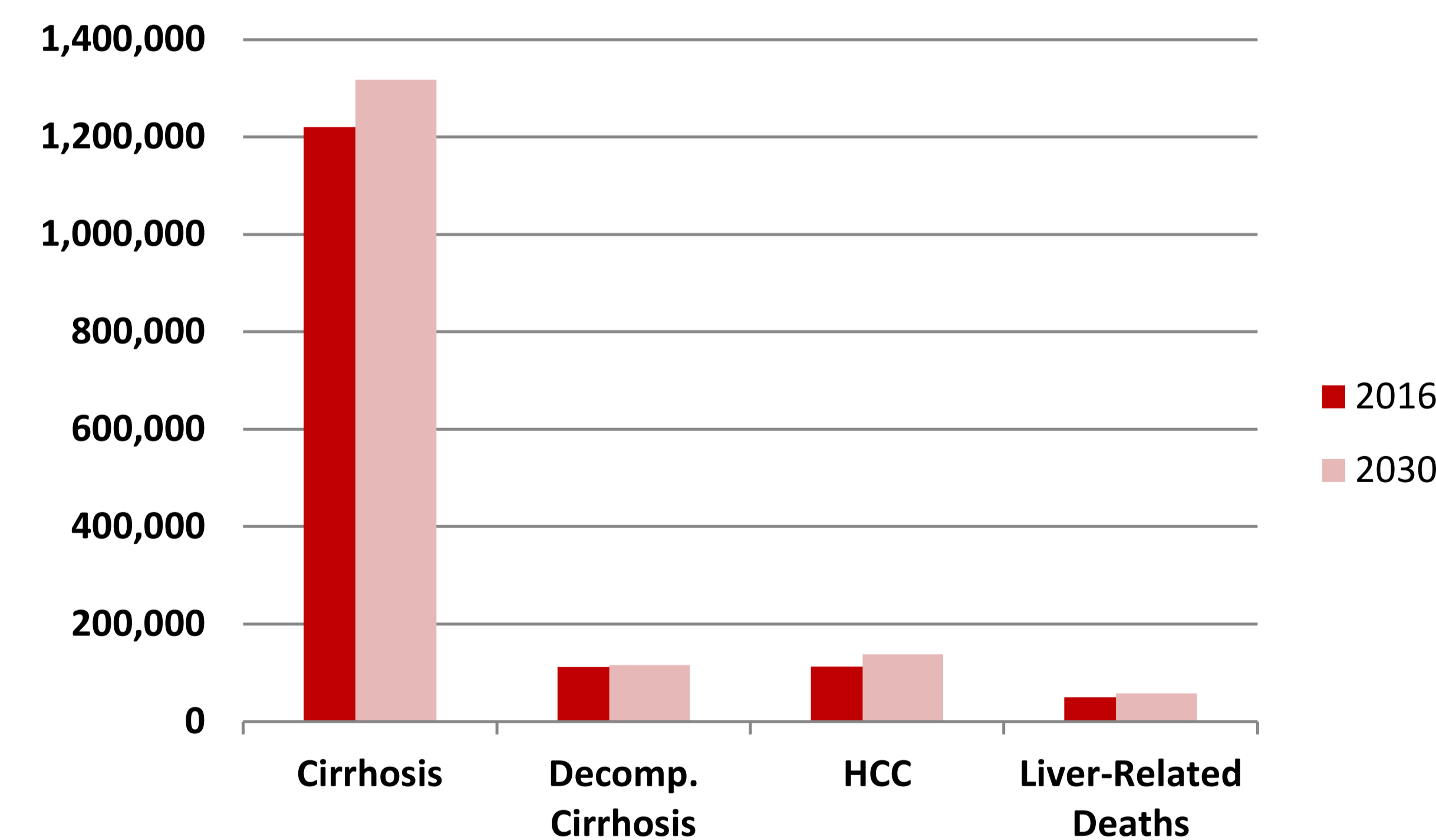


Figure 2. CHB Prevalence Rates in 5 Year Olds, 2016 and 2030

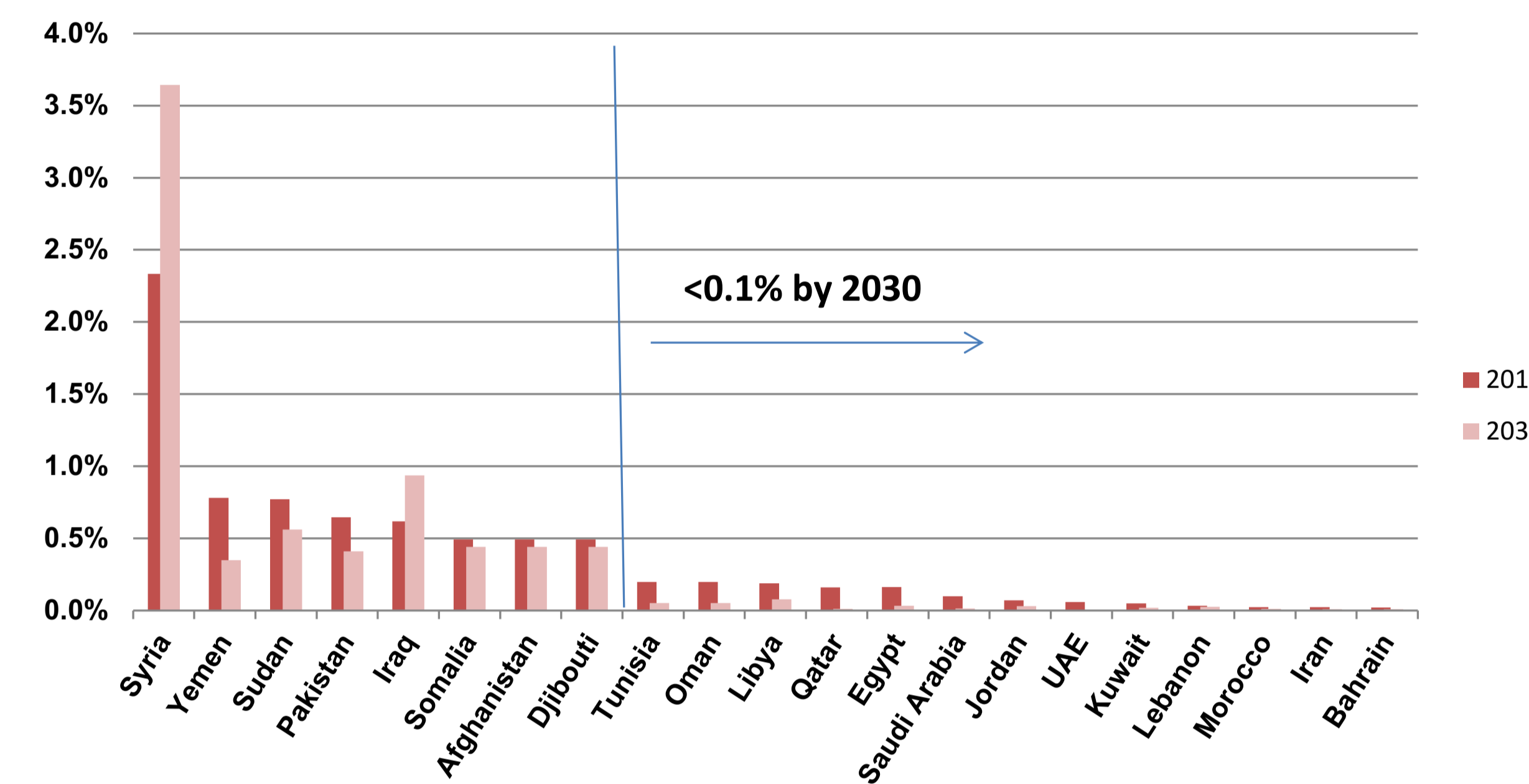


Table 1. HBV Birth Dose and Three Dose Vaccination Coverage

Country	3D (%)	BD (%)	Country	3D (%)	BD (%)
Afghanistan	-	-	Oman	99	100
Bahrain	99	100	Pakistan	73	0
Djibouti	-	-	Qatar	89	92
Egypt	94	0	Saudi Arabia	98	99
Iran	99	97	Somalia	-	-
Iraq	74	43	Sudan	94	0
Jordan	98	95	Syria	62	80
Kuwait	96	96	Tunisia	98	80
Lebanon	97	98	UAE	100	91
Libya	94	99	Yemen	88	0
Morocco	99	15			

## CONCLUSIONS

- While total CHB infections are expected to decline over the next 15 years in the EMRO region, advanced morbidity and mortality are projected to increase as the infected population ages. Slowing or stopping the disease progression with treatment could reduce the projected disease burden.
- A CHB prevalence of 0.5% among five year olds and an expected decline of only 6% suggest that higher perinatal prophylaxes coverage is needed to further reduce the prevalence among children, particularly in the countries with limited three dose coverage and lack of birth dose.

## REFERENCES

1. Merrill, R.M. and B.D. Hunter, *Seroprevalence of markers for hepatitis B viral infection*. Int J Infect Dis, 2011. 15(2): p. e78-121.
2. Ott, J.J., et al., *Global epidemiology of hepatitis B virus infection: New estimates of age-specific HBsAg seroprevalence and endemicity*. Vaccine, 2012. 30(12): p. 2212-2219.
3. Schweitzer, A., et al., *Estimations of worldwide prevalence of chronic hepatitis B virus infection: A systematic review of data published between 1965 and 2013*. The Lancet, 2015.

## 2016 Estimates

- HBsAg+ prevalence data were available and models were developed for 18 countries representing 92% of the region's population. In 2016, the regional CHB prevalence rate was estimated at 2.2% (CI: 1.9-2.9%), corresponding to 14.9 million (CI: 12.9-19.5 million) infections after the impact of perinatal prophylaxes was taken into consideration. There were an estimated 1.2 million total cases of cirrhosis, 111,000 cases of decompensated cirrhosis, 112,000 cases of hepatocellular carcinoma (HCC) and 45,800 liver-related deaths.
- Among five year olds, the regional prevalence rate was estimated to be 0.5% (CI: 0.4-0.7%) corresponding to 76,100 infections (CI: 67,300-110,000).

## 2030 Estimates

- By 2030, total CHB infections in the EMRO region are projected to decline by 9% in the general population. However, total cirrhosis, decompensated cirrhosis, HCC and liver-related deaths are expected to increase by 8%, 4%, 22% and 15%, respectively. Syria and Somalia are the only countries expected to increase the number of infections, and in both cases this is due to projected population growth.
- Among five year olds, total CHB infections are projected to decrease by 6% by 2030, and 13 countries are projected to reach the WHO Target of <0.1% HBsAg prevalence in this cohort.

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## CONTACT INFORMATION

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