Achieving World Health Organization Targets for Hepatitis B by 2030: Results from 17 WHO AFRO Countries

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INTRODUCTION

- The World Health Organization Africa Region (WHO AFRO) has a high burden of hepatitis B virus (HBV) but data to guide management strategies are lacking [1-2].

- Progression to decompensated cirrhosis (DC), hepatocellular carcinoma (HCC), and liver related death (LRD) makes the virus a main driver of morbidity and mortality in the region with HBV accounting for almost 884,000 deaths annually[3].

AIM

- Use a modeling approach to describe HBV-related disease progression from 2016 - 2030 in 17 WHO AFRO countries (Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Ethiopia, Gabon, Gambia, Kenya, Madagascar, Malawi, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zimbabwe).

- Consider the impact of scaling up interventions to meet WHO 2030 targets.

METHOD

- 17 country models were seeded with published, expert verified, and/or extrapolated epidemiology data related to serological prevalence, diagnosis, vaccination and treatment [3].

- Inputs were aggregated into a regional model and interventions scaled up with the aim to achieve WHO hepatitis elimination targets of 90% diagnosed and 80% treated with a 65% reduction in mortality by 2030 [4].

Regional Model Inputs (2016)	Value
Total Infected	41,566,000
Prevalence	7.4%
Diagnosed	8,060,000
Annual Newly Diagnosed	8,620
Number Treated	20,300

RESULTS

Baseline
- In 2016, there were ~42 million chronic HBV (CHB) cases across the 17 modeled countries, with Nigeria alone accounting for ~50% of all infections.
  - Ten modeled countries (Burkina Faso, Cameroon, Chad, Ethiopia, Madagascar, Nigeria, Senegal, Tanzania, Uganda, Zimbabwe) had over a million cases each.
  - Five countries (Burundi, Central African Republic, Kenya, Malawi, Rwanda) had 200,000 – 700,000 cases while two (Gabon and Gambia) had fewer than 100,000 cases.
- On average across the 17 countries, males were more likely to be infected and 65% of cases were aged 15-49 years (Fig. 1).
- If baseline parameters (as described in the methodology table) are maintained, total cases will reach ~44 million by 2030, a 7% increase.
  - Three countries (Chad, Central African Republic and Nigeria) account for the net increase.
  - Prevalent DC, HCC and annual LRD increase 20 – 40% for all countries with Ethiopia, Gabon and Gambia each showing >30% increases in HCC cases (Fig. 3).

Meeting WHO 2030 Targets
- Across all countries, ~40 million cases will need to be diagnosed and 9 million treated annually by 2025 to meet WHO hepatitis elimination targets for diagnosis and treatment.
- This represents an exponential increase in diagnosis and treatment respectively from 2016, and it reduces DC by 75% and HCC by 35%.
- The impact of these interventions on HBsAg prevalence is most visible in the 0 – 10 year age group (Fig. 2).
- Mortality, however, could only be reduced by 61% in this time frame, which would not achieve the WHO 2030 target for a 65% reduction (Fig.4).

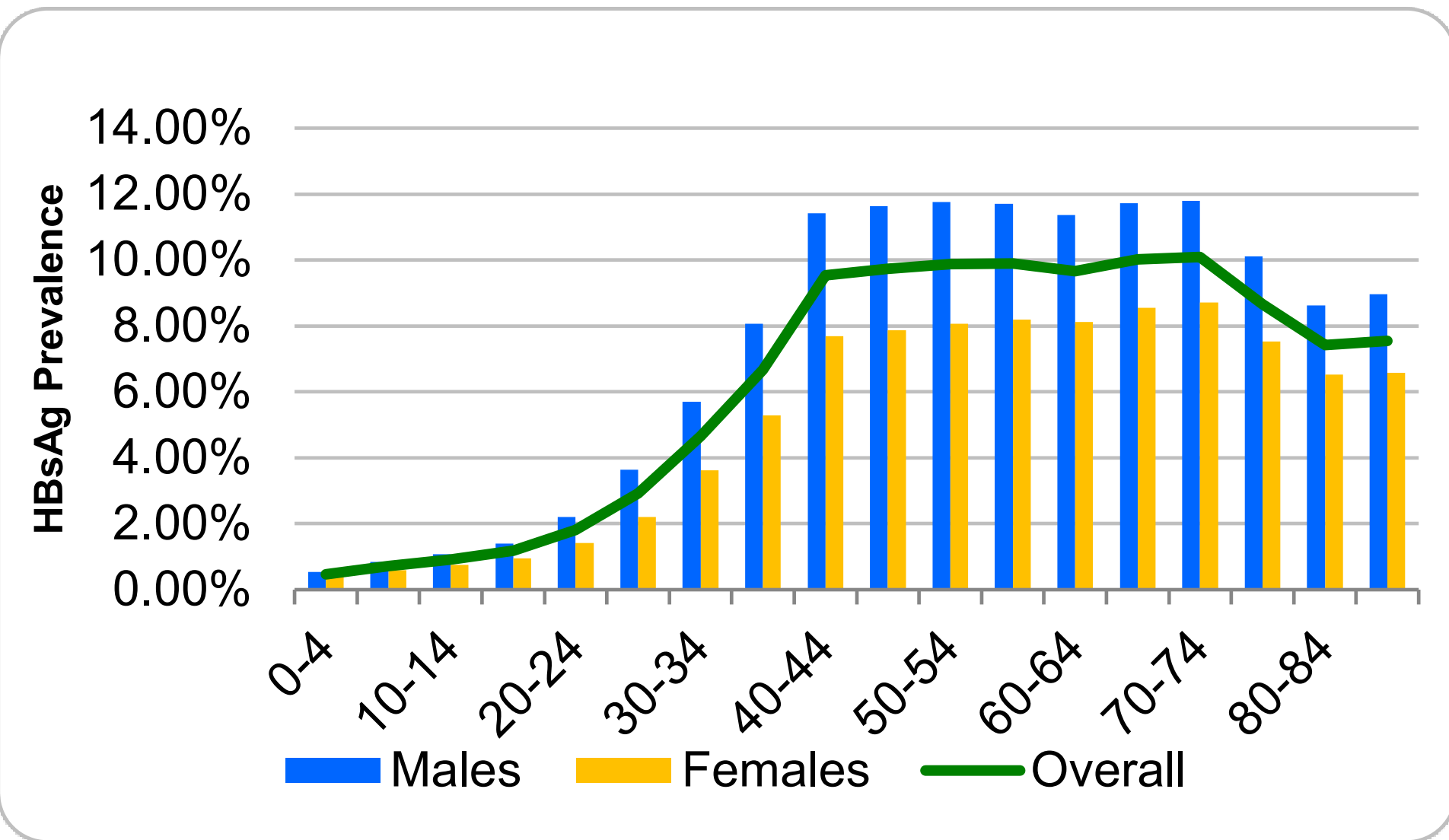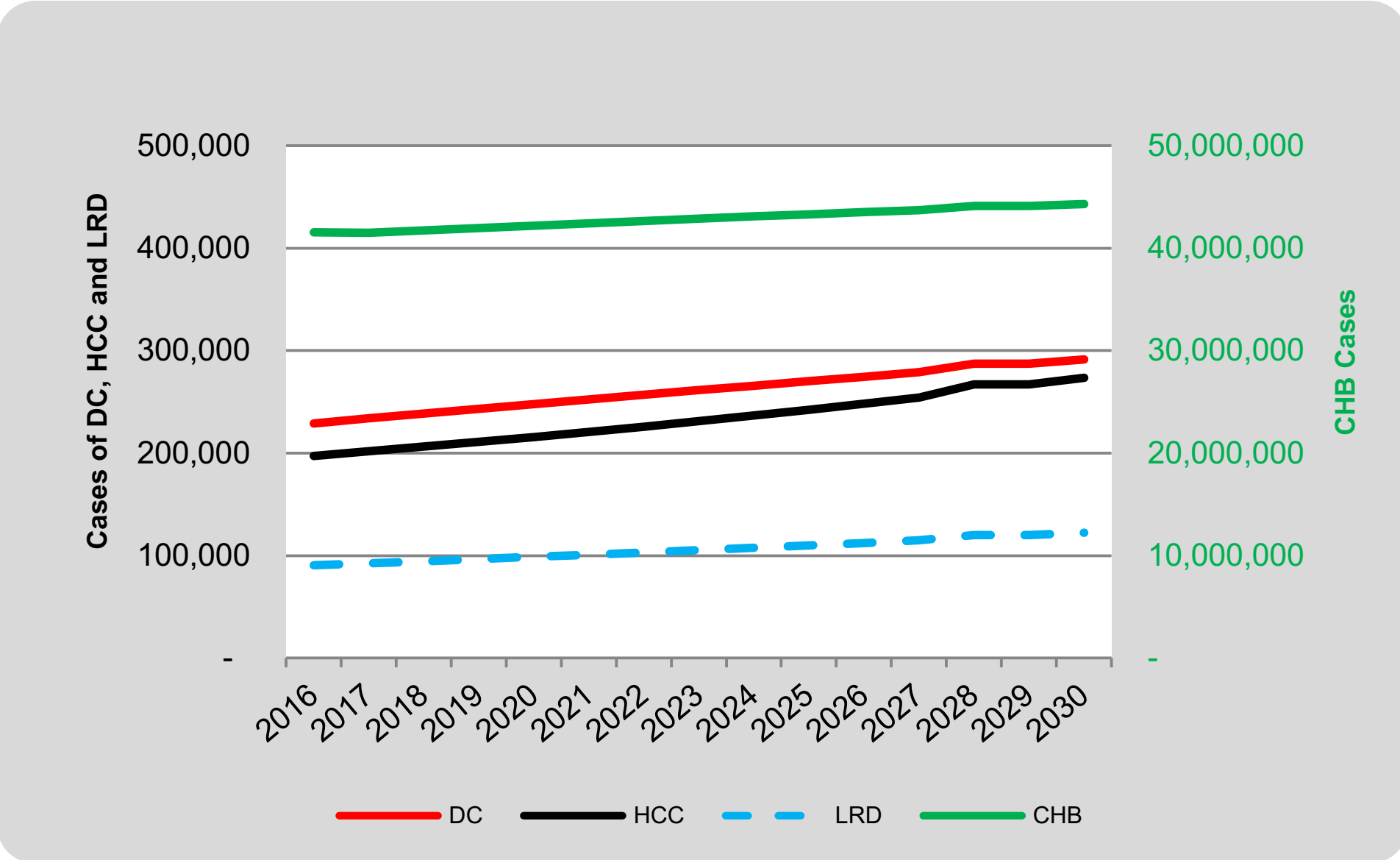Figure 1. Overall HBsAg Prevalence by Sex & Age Cohort, 2030 (Base)

Figure 2. Overall HBsAg Prevalence by Sex & Age Cohort, 2030 (WHO Targets)

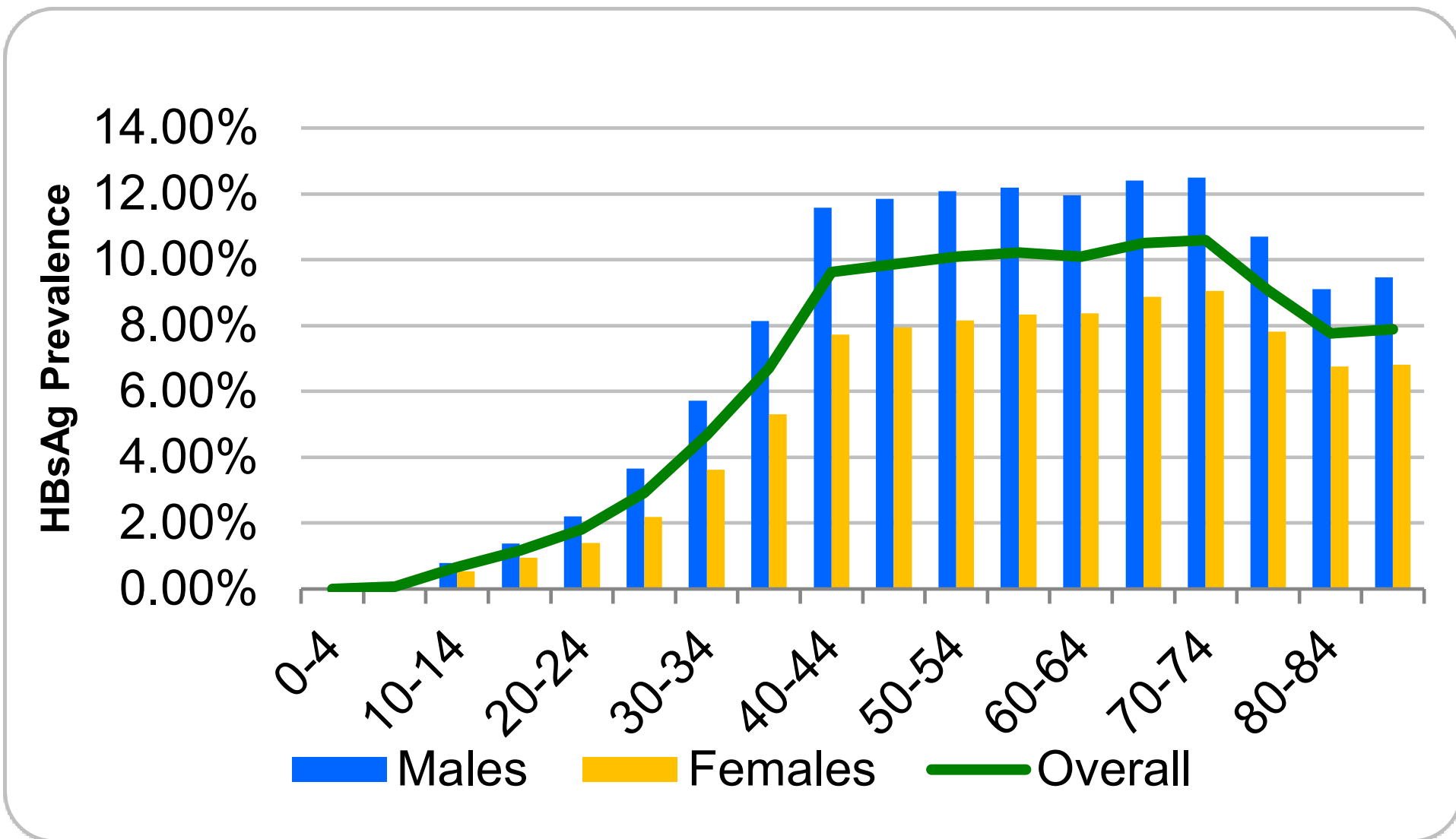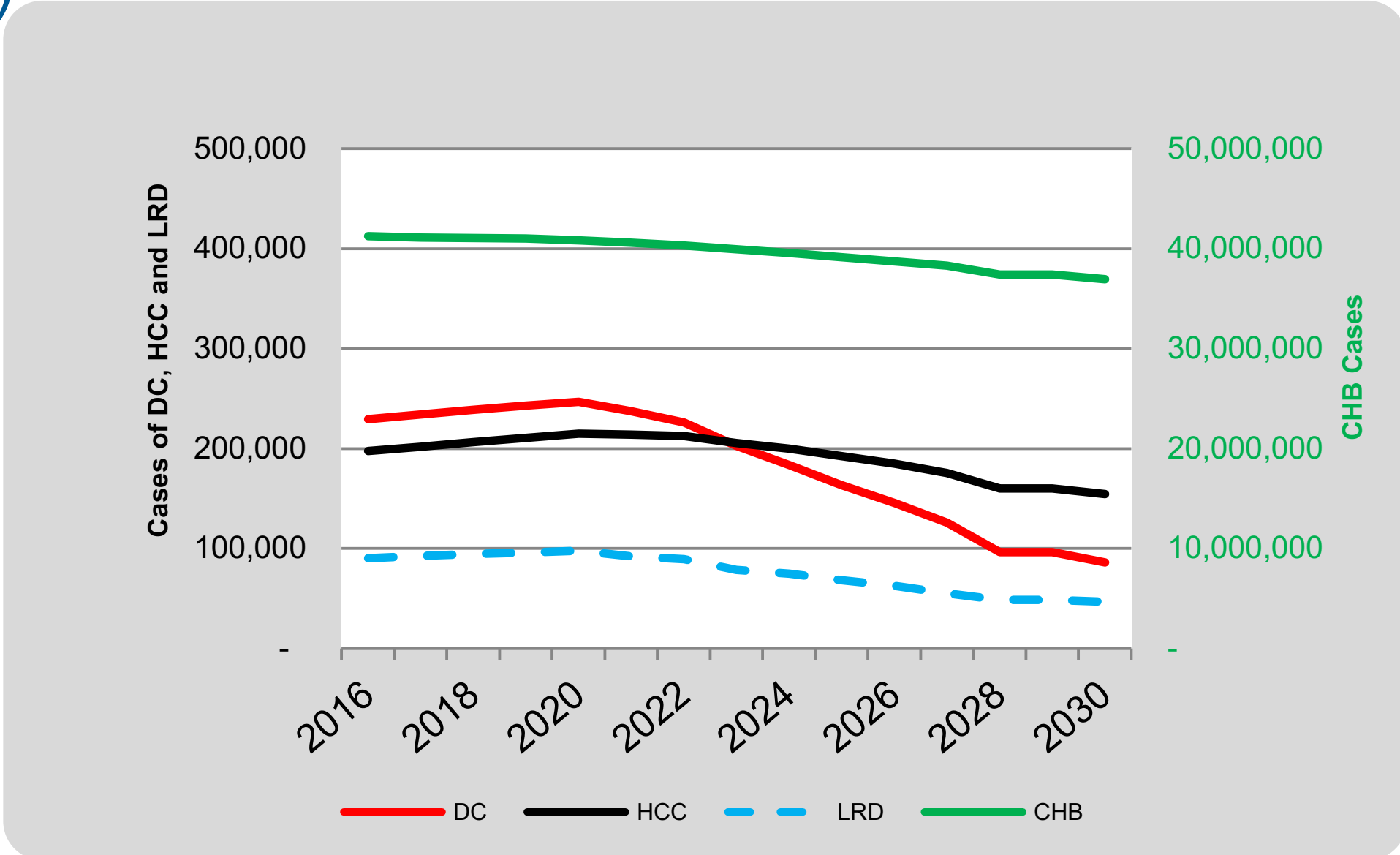Figure 3. Change in HBV-related Morbidity and Mortality, 2016 – 2030 (Base)

Figure 4. Change in HBV-related Morbidity and Mortality, 2016 – 2030 (WHO Targets)

CONCLUSIONS

- In each country and at the regional level, current interventions are insufficient to meet WHO targets for HBV.
- In light of the sizeable disease burden in the young population of these countries, preventive, diagnostic and treatment efforts will have to be radically expanded in the next 10 years to meet WHO 2030 targets for treatment and diagnosis.
- Mortality targets are unlikely to be met by 2030, even with diagnosis and treatment scaled up to meet WHO targets.

ACKNOWLEDGEMENTS

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