

Hepatitis B prevalence and the impact of vaccination in Georgia: results from a nationwide serosurvey

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INTRODUCTION

Historically, Georgia had intermediate endemicity of hepatitis B virus (HBV).

Hepatitis B vaccine (HepB) was introduced nationwide in 2001 and the birth dose (HepB-BD) was added in 2003. Coverage has been mostly $\geq 90\%$ since 2010 (Figure).

In a nationwide serosurvey among adults in 2015, the prevalence was 2.9% (2.4%–3.5%) for HBsAg and 25.9% (24.1%–27.6%) for anti-HBc [1]. Prevalence among children has not been previously assessed.

Georgia has adopted regional and global viral hepatitis goals. In 2021, hepatitis B was included in Georgia's National strategy for Viral Hepatitis Elimination in 2021.

AIM

Estimate prevalence of HBV infection among children

Update prevalence estimates for HBV infection among adults

Assess impact of HepB vaccination and progress towards meeting regional and global hepatitis B goals

METHODS

Nationwide household survey with stratified, multi-stage cluster design

Adults ≥ 18 years and children 5-17 years included; participants aged 5-20 years eligible to HepB vaccination as infants

All samples tested for anti-HBc; anti-HBc-positives tested for HBsAg and HBV DNA using Abbott ARCHITECT Anti-HBc and HBsAg, and Abbott HBV RealTime PCR assays.

Primary outcome measures - nationally representative weighted % and 95% confidence intervals (CI)

RESULTS

Total participants: 8,710 (1,473 children, 7,237 adults)

Prevalence among children: very low:

HBsAg+, 0.03% (0%-0.19%)

Anti-HBc+, 0.7% (0.3%-1.6%)

Details of HBV infected children:

HBsAg+: N=1; 13 years, F, received a single HepB dose at 2 months; adult enrolled from the same household (42 years, F) also HBsAg+.

Anti-HBc+: N=7; no clustering by year of birth or geographically; HepB vaccinations: 5 received 3 doses, 2 received 1 dose, 5 received timely HepB-BD

Prevalence among adults:

HBsAg+, 2.7% (2.3%-3.4%), unchanged from 2015 ($p>0.05$), and corresponding to **~77,000 persons living with chronic HBV** infection

Anti-HBc+, 21.7% (20.4%-23.2%), lower than in 2015 ($p=0.004$) because of the low prevalence among 18-23 year-olds, included only in 2021; no differences for other age groups

HBsAg prevalence lowest (0.2%) among 18–23-year-olds (the age group includes three cohorts born after vaccine introduction), and highest (8.6%) among 35–39-year-olds; anti-HBc prevalence increased from 1.3% among 18–23-year-olds to 28.6% among ≥ 60 years (Table).

HBsAg prevalence higher among males than females: 3.6% (2.8%-4.7%) vs 2.0% (1.4%-2.7%); $p=0.003$; no differences by sex for anti-HBc

No significant differences by region for HBsAg; anti-HBc prevalence varied across regions ($p=0.023$) and was highest ($\geq 25\%$) in western Georgia.

HBV infection risk factors in multivariate analysis: injectable drug use – adjusted odds ratio (aOR), 5.51 (2.20-13.80), and inconsistent condom use – aOR, 1.84 (1.02, 3.32).

Among adult participants, 13.5% were previously tested for HBV and 32.7% of HBsAg+ participants aware of their HBV infection before the serosurvey. Only 1.7% of adult participants reported receipt of HepB vaccination.

Figure. Immunization coverage HepB3 and HepB-BD vaccine – Georgia, 2001-2020, WHO/UNICEF estimates

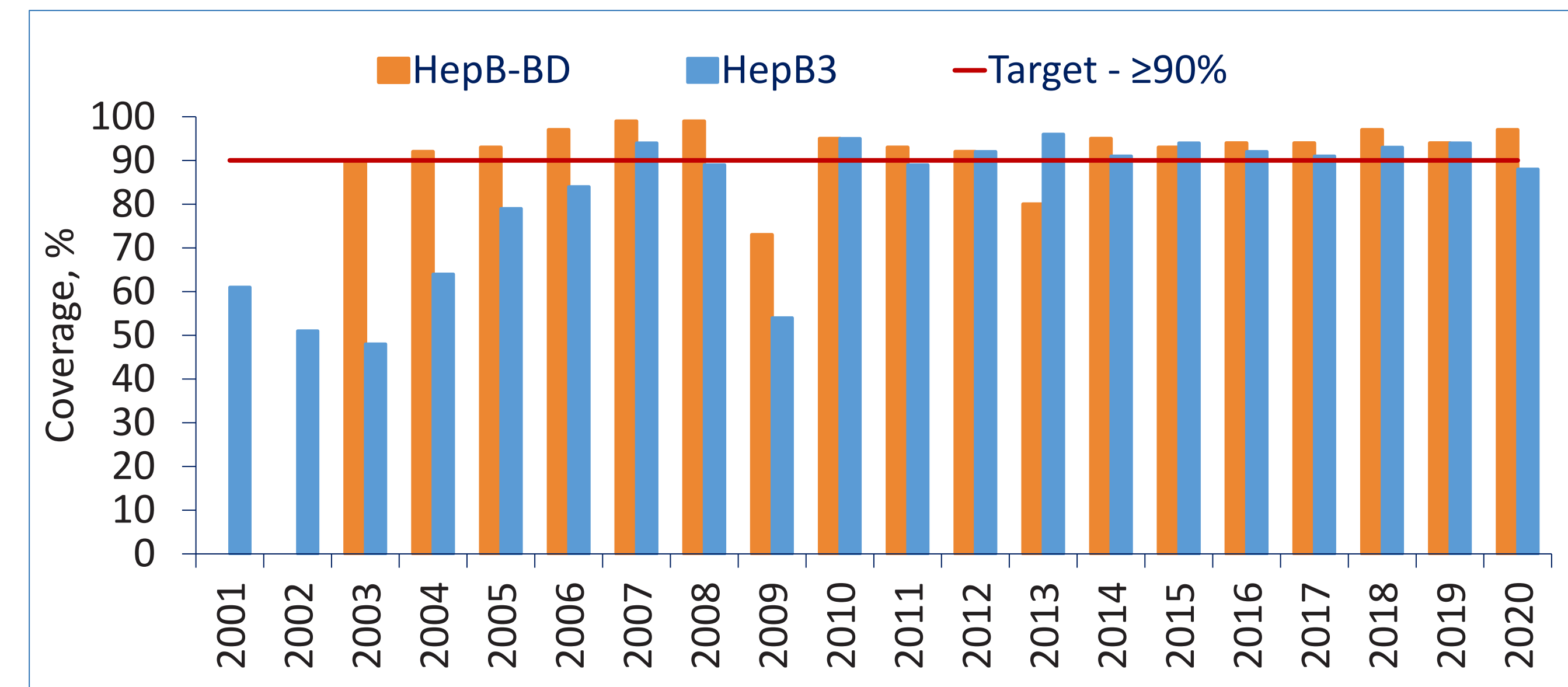


Table. National anti-HBc and HBsAg prevalence by age group, Georgia, 2021

Age, years	No. tested	Anti-HBc+, weighted % (95% CI)	HBsAg+, weighted % (95% CI)
All ages ≥ 5	8,710	17.9 (16.7–19.1)	2.2 (1.8–2.8)
Children 5–17	1,473	0.7 (0.3–1.6)	0.03 (0–0.19)
Adults ≥ 18	7,237	21.7 (20.4–23.2)	2.7 (2.2–3.4)
18–23	322	1.3 (0.6–3.1)	0.2 (0.0–1.5)
24–29	430	3.8 (2.0–7.1)	0.9 (0.2–4.8)
30–34	565	11.7 (8.2–16.5)	2.9 (1.2–7.0)
35–39	684	27.8 (23.4–32.6)	8.6 (6.1–12.1)
40–49	1,233	27.4 (23.9–31.3)	3.0 (2.0–4.5)
50–59	1,517	28.2 (25.0–31.7)	3.0 (1.6–5.7)
≥ 60	2,476	28.6 (26.1–31.2)	1.7 (1.2–2.6)

Progress toward meeting the European Regional hepatitis B control goal, Georgia, 2021

Criteria for validation [2]	Country indicators	Status
$\geq 90\%$ coverage with ≥ 3 doses of HepB (last 3 yrs)	Hexa2, 2018–2020: 91%–97% Hexa3, 2018–2020: 88%–94%	✓ Met
$\geq 90\%$ coverage with timely HepB-BD (last 3 yrs)	2018–2020: 96%–97%	✓ Met
$\leq 0.5\%$ HBsAg prevalence in cohorts eligible for vaccination	National HBsAg prevalence among 5–17 year-olds: 0.03% (0–0.19%)	✓ Met

Georgia's application for validation currently under review by the WHO/EURO Regional Hepatitis B Working Group

CONCLUSIONS

The impact of 20 years of successful HepB vaccination in Georgia is demonstrated by a very low HBsAg prevalence among children that is below the 0.5% European regional hepatitis B control target and meets the $\leq 0.1\%$ seroprevalence target for elimination of mother-to-child transmission of HBV.

Georgia has likely achieved the European regional hepatitis B control goal and the elimination of MTCT of hepatitis B, pending validation by the respective WHO expert groups

Chronic HBV infection remains a problem among adults born before introduction of routine infant HepB vaccination in Georgia

Focusing efforts on screening, treatment, and preventive interventions among adults, along with sustaining high immunization coverage among children, can help Georgia achieve elimination of hepatitis B as public health threat by 2030.

These results can inform development of the action plan for the hepatitis B component of the National Strategy for Viral Hepatitis Elimination in Georgia

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