

# Prevalence of Hepatitis B Virus (HBV) and Latent Tuberculosis Co-Infection and Risk of Drug Induced Liver Injury Across Two Large HBV Cohorts in the United States

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## BACKGROUND

- Prevalence of LTBI is estimated to be ~2-fold higher among persons with chronic HBV.
- Although treatment of active TB in persons with chronic HBV is associated with an increased risk of drug induced liver injury (DILI), there are limited data on LTBI-HBV in real-world settings.

## AIM

- We evaluated prevalence and predictors of HBV-LTBI co-infection and DILI risk among two distinct US chronic HBV cohorts.

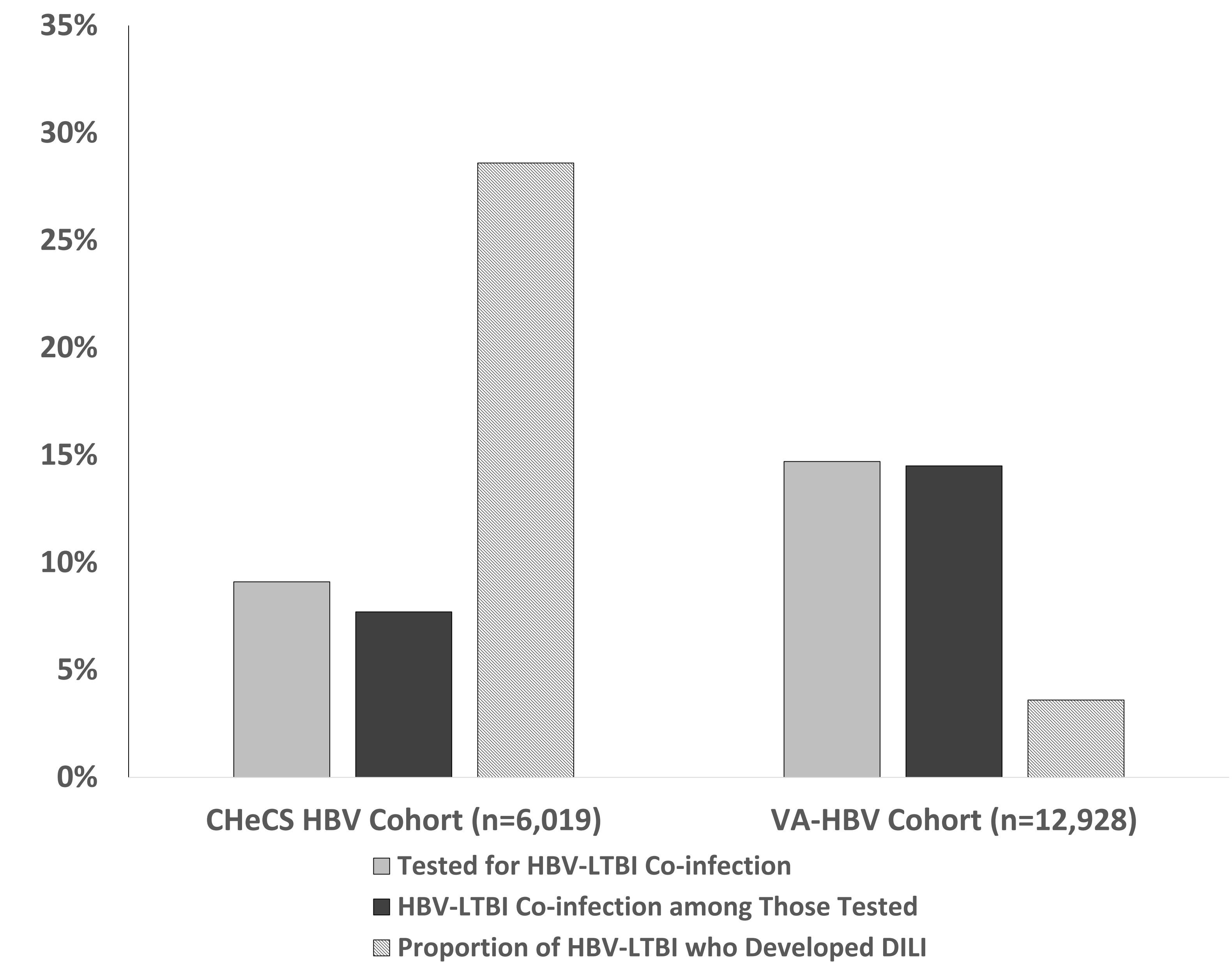
## METHODS

- **Study cohort:** Chronic Hepatitis Cohort Study (CHeCS) and the Veterans Affairs national chronic HBV (VA-HBV) cohorts
- **Study period:** 2010 to 2020
- **Study definitions:**
  - Chronic HBV was identified in patients with at least two positive HBV tests (HBsAg, HBeAg, detectable HBV DNA) at least 6 months apart or one positive HBV test and one HBV ICD-9/10 code.
  - LTBI was defined using a combination of laboratory data, ICD-9/10 codes, and medication data
  - Drug induced liver injury (DILI) was defined based on ICD-9/10 codes or changes in alanine aminotransferase (ALT) levels following start of LTBI treatment.
- **Outcomes:**
  - Comparison of HBV-LTBI co-infection among HBV patients that were tested for LTBI were performed with chi-square testing.
  - Adjusted multivariate logistic regression models evaluated predictors of HBV-LTBI co-infection.
  - Incidence of DILI was evaluated among HBV-LTBI patients that received LTBI treatment

## RESULTS

- **Among 6,019 chronic HBV patients in the CHeCS cohort:**
  - 44% were women, 56% were men
  - 47% were age 18-39 years, 39% age 40-59 years, and 14% age 60 years and over
  - 47% were Asian, 20% non-Hispanic white (NHW), 14% African American (AA), 1% Hispanic
  - 3% had concurrent HCV infection and 6% had concurrent HIV infection
  - Overall 9.1% were tested for TB, among which 7.7% had HBV-LTBI.
  - In this cohort, women had higher prevalence of HBV-LTBI compared to men (13% vs. 5%,  $p<0.01$ ), but no other significant differences were observed.
  - A total of 7 HBV-LTBI patients received LTBI treatment, among which 2 patients or 28.6% developed DILI.
- **Among 12,928 chronic HBV patients in the VA-HBV cohort:**
  - 94% were men, 6% were women
  - 6% were age 18-39 years, 30% age 40-59 years, and 65% age 60 years and over
  - 10% were Asian, 42% AA, 39% NHW, 2% Hispanic
  - 86% US-born, 15% had HCV, and 2.3% had HIV
  - Overall, 14.7% were tested for TB, among which 14.5% had HBV-LTBI.
  - In this cohort, compared to NHW, higher prevalence of HBV-LTBI co-infection was observed in AA (15% vs. 12%,  $p<0.01$ ) and Asians (23% vs. 12%,  $p<0.01$ ). Higher prevalence of HBV-LTBI co-infection was seen in non-US born vs. US-born (25% vs. 13%,  $p<0.05$ ).
  - A total of 115 HBV-LTBI patients received LTBI treatment, among which 4 patients or 3.6% developed DILI.

## Prevalence of HBV-LTBI Co-Infection and Risk of DILI



On adjusted multivariate analyses of chronic HBV patients that underwent TB testing:

- Women had significantly higher odds of HBV-LTBI co-infection compared to men in the CHeCS cohort (OR 2.57, 95% CI 1.36 – 4.85,  $p<0.01$ ).
- Among the VA-HBV cohort:
  - Older patients had higher odds of HBV-LTBI (age  $\geq 60$  years vs. age 18-39 years: OR 1.73, 95% CI 1.00-3.01,  $p<0.01$ )
  - Compared to NHW, AA had higher odds of HBV-LTBI (OR 1.70, 95% CI 1.18 – 2.43,  $p<0.01$ )
  - Compared to US-born, non-US born patients had higher odds of HBV-LTBI co-infection (OR 2.31, 95% CI 1.34 – 4.00,  $p<0.01$ )

## DISCUSSION

- Among two large distinct US cohorts of chronic HBV patients, testing for LTBI was infrequent despite relatively high prevalence of HBV-LTBI. Prevalence of HBV-LTBI 0.5-2-fold higher than national LTBI prevalence.
- Only 9%-15% of CHB patients were tested for LTBI, and ~17%-42% of those with co-infection were prescribed LTBI treatment. While While nearly 30% of HBV-LTBI patients in the predominantly Asian and younger CHeCS cohort developed DILI, only 3.6% in the predominantly older, US born VA-HBV cohort developed DILI.
- Better understanding risk factors for DILI among HBV-LTBI patients can help guide clinicians to modify LTBI treatment to reduce DILI risk

## REFERENCES

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