

## Differential spatial distribution of hepatitis B virus by ethnicity in British Columbia, Canada: Expanded role of a large administrative cohort

Butt, Z<sup>1</sup>, Janjua, N<sup>2</sup>, Wong, S<sup>2</sup>, Yu, A<sup>2</sup>, Alvarez, M<sup>2</sup>, Chapinal, N<sup>2</sup>, Wong, J<sup>2</sup>, Binka, M<sup>1</sup>, Buxton, J<sup>2</sup>, Gilbert, M<sup>2</sup>, Darvishian, M<sup>2</sup>, Rossi, C<sup>2</sup>, and Krajdén, M<sup>2</sup>

<sup>1</sup>University of British Columbia

<sup>2</sup>British Columbia Centre for Disease Control

### Introduction

Most chronic hepatitis B virus (HBV) infections in Canada are diagnosed among immigrants from endemic countries and lack traditional risk factors while most acute infections are usually diagnosed in Caucasian population with co-occurring risk factors. Thus, understanding geographical distribution of HBV infection by ethnicity could inform screening and care strategies.

### Objectives and Approach

We identified geographic clusters of HBV infection in British Columbia by ethnicity during the years 1990-2015 using the BC Hepatitis Testers Cohort (BC-HTC). The BC-HTC includes 1.7 million individuals tested for HCV or HIV at the BC Public Health Laboratory or reported as a case of HCV, HIV, or HBV linked to healthcare administrative databases. We plotted maps of HBV diagnoses (acute and chronic) rate at the Dissemination Area level between 1990-2015 stratified by ethnicity and compared this distribution with injection drug use (IDU) distribution in BC.

### Results

The distribution of HBV varied considerably by ethnicity. From 1990 to 2015, a higher rate of HBV infection was found among East Asians and Caucasians followed by South Asians and other ethnicities. East Asians with highest rates were mainly concentrated in Vancouver city, Burnaby and Richmond (Metro Vancouver) while South Asians with highest rates were mostly concentrated in urban areas in Surrey and Abbotsford. Caucasians with higher rates were clustered in Downtown Eastside in Vancouver, Surrey and Abbotsford (Metro Vancouver) and urban areas in Greater Victoria (Vancouver Island), Prince George (Northern BC) and Kamloops (Interior BC). The distribution of IDU closely followed the distribution of HBV among Caucasians but did not align with other ethnic groups.

### Conclusion/Implications

Results highlight distinct areas of HBV infection clustering by ethnicity, which differ from areas with high IDU distribution except in Caucasians. Findings support ethnicity-based HBV screening/prevention and care services to areas with immigrants from HBV-endemic countries and integrated HBV and harm reduction services for early diagnosis and treatment in Caucasians.

