



BC Centre for Disease Control
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Perinatal Services BC
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Perinatal Hepatitis B Screening, Infection, and Prophylaxis in British Columbia

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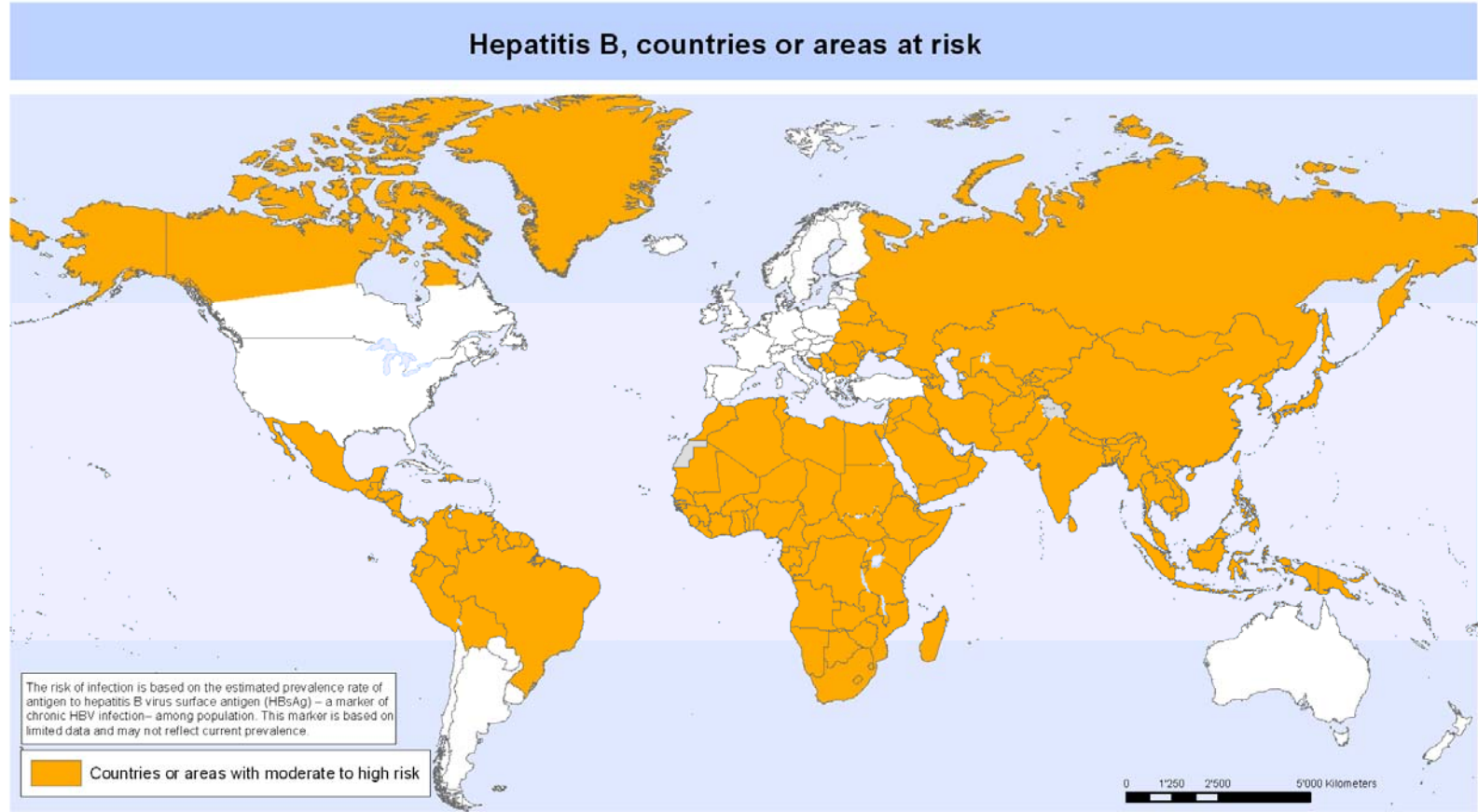
Outline

- Hepatitis B Virus
- Perinatal testing guidelines in British Columbia
- Data sources and linkage
- Patterns of HBV testing and infection in BC
- Challenges with case capture
- Newborn prophylaxis
- Implications for practice

Hepatitis B Virus

- Virus that infects the liver
- Highest prevalence in developing world
 - But moderately high areas of Canada
 - e.g. areas with larger populations of immigrants from endemic countries

Prevalence of Hepatitis B



Hepatitis B

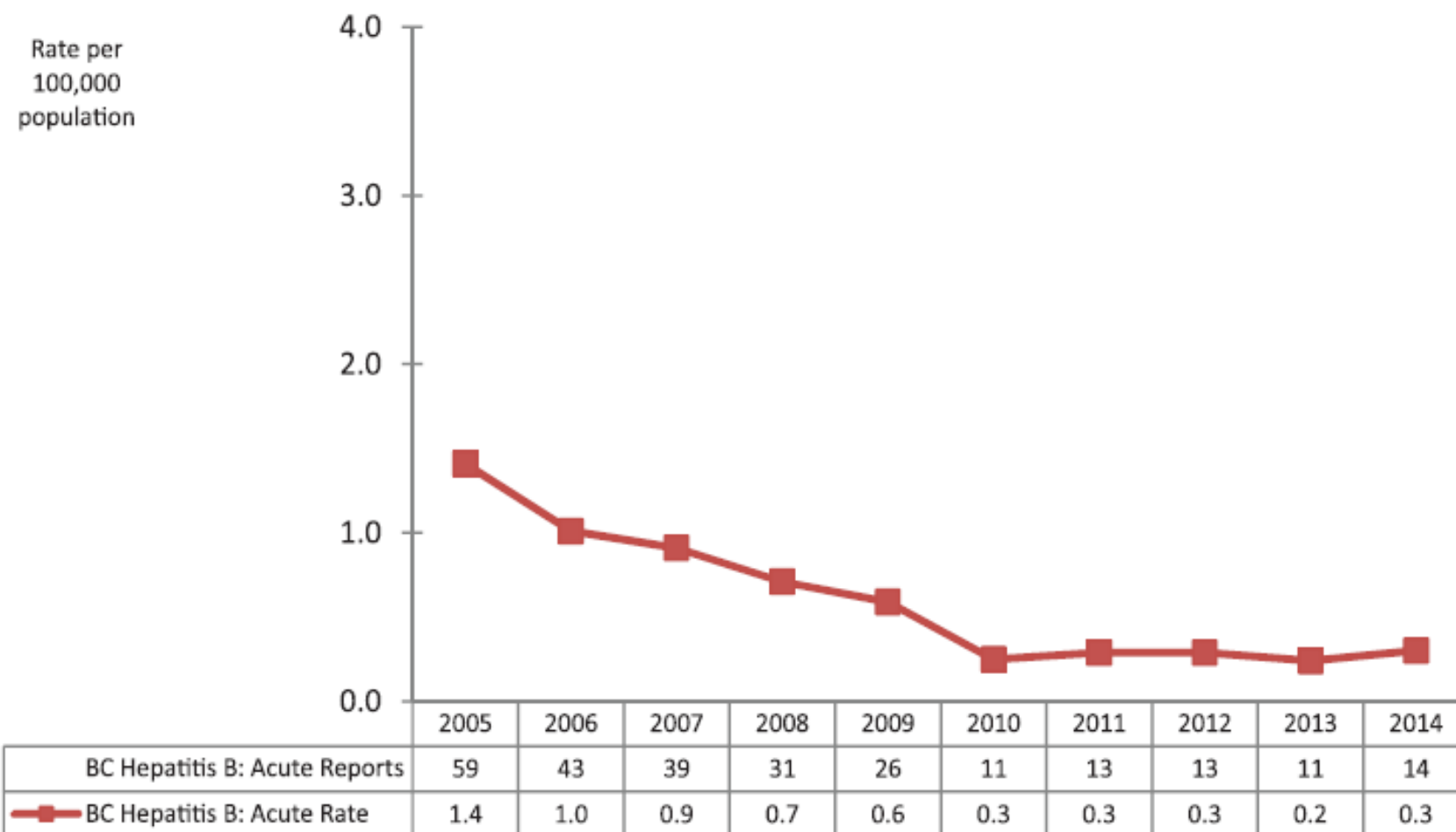
- Insidious onset: Anorexia, vague AP, Nx/Vx
 - Liver symptoms more common in adults
 - Case fatality: ~1%
- Modes of transmission:
 - Percutaneous exposure
 - Non-intact skin exposure
 - Mucosal exposure (e.g. sexual)
 - Perinatal exposure
 - esp if HBeAg +ve and high HBV DNA

Chronic Hepatitis B

- Virus can develop chronic infection
 - Occurs in ~90% of infants infected at birth
 - Occurs in <10% of those infection after 5 yo
- 15-25% of chronic HBV have complications
 - Hepatocellular carcinoma
 - Cirrhosis

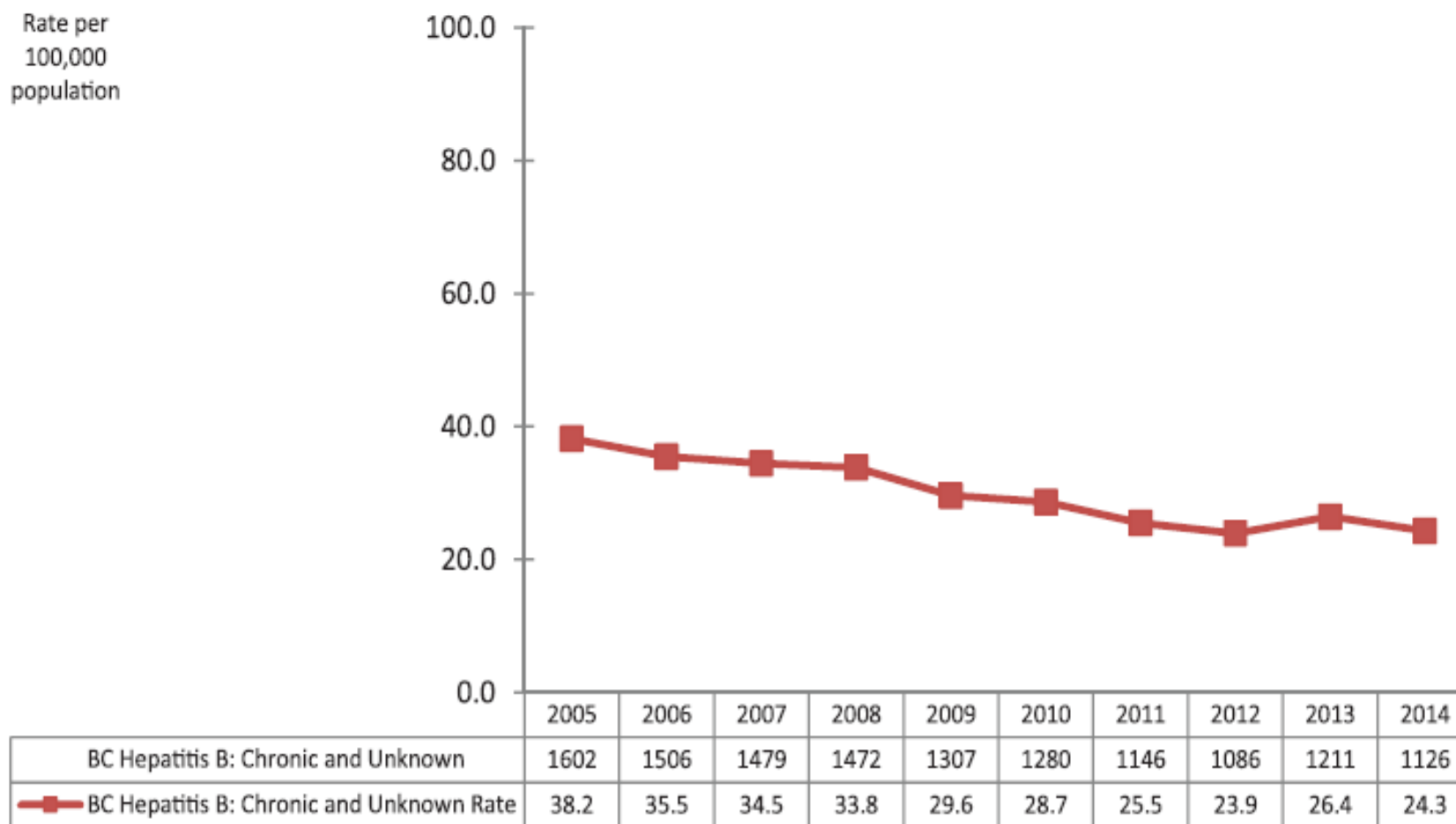
Epidemiology of Acute HBV in BC

14.4 Acute Hepatitis B Rates by Year, 2005-2014



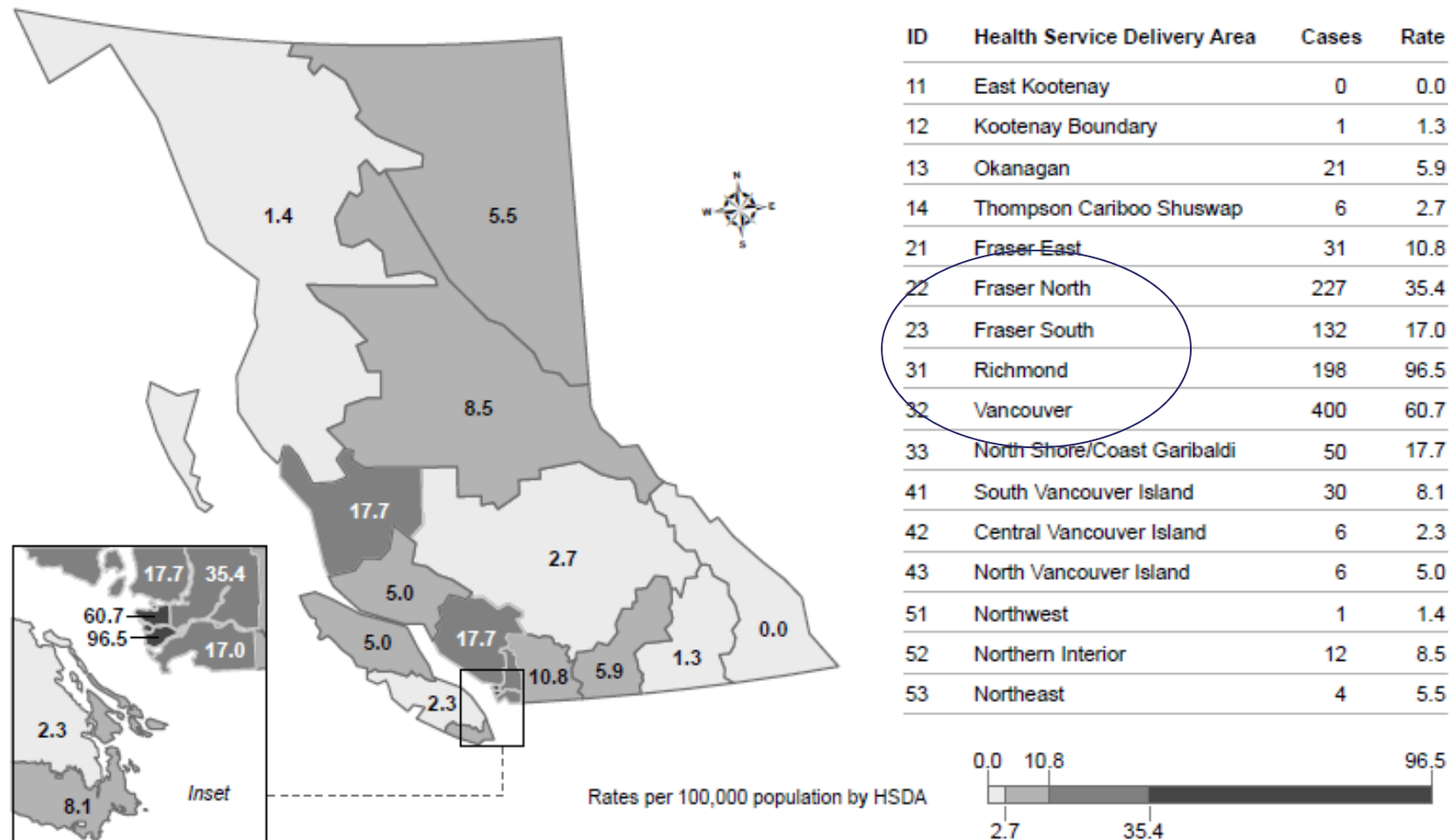
Epidemiology of “Chronic” HBV in BC

14.1 Chronic and Unknown Hepatitis B Rates by Year, 2005-2014



Epidemiology of “Chronic” HBV in BC

14.2 Chronic and Unknown Hepatitis B Rates by HSDA, 2014



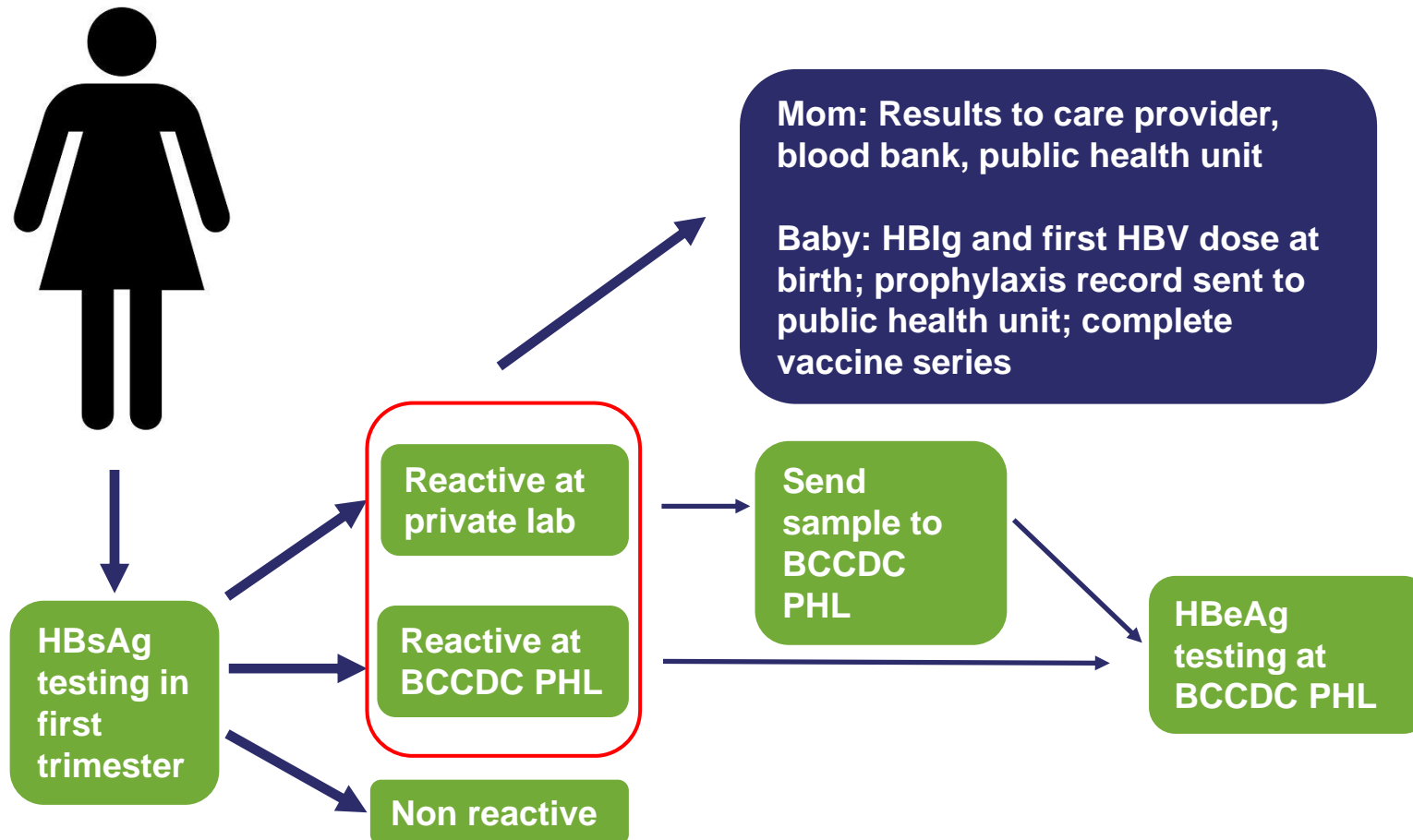
Perinatal HBV Transmission

- Risk of vertical transmission of HBV is high
 - ~40% of infants to HBV-infected moms will develop chronic HBV infection (without PEP)

Preventing Perinatal Transmission

- Vaccination
 - Publicly funded for birth cohort 1980 and on
 - Infant program in BC due to epidemiology
- Prenatal HBV screening
 - First trimester screening recommended
- Post-exposure prophylaxis
 - HBIG and HBV infant vaccination

Perinatal Hepatitis B Testing and Treatment Pathway



Objectives

- Use multiple administrative data sources to assess:
 - whether maternal HBsAg screening follows recommended provincial guidelines;
 - describe temporal trends and regional variations in perinatal HBV testing and infection in women;
 - differences in case ascertainment across data sources;
 - compliance with newborn prophylaxis

Data Sources

- BC Perinatal Data Registry (BCPDR) singleton delivery records: April 1, 2008 to December 31, 2010
- BC Public Health and Microbiology Reference Laboratory records: May 1, 2006 to December 31, 2010
- integrated Public Health Information System (iPHIS) HBV cases: January 1, 1992 to December 31, 2010

Cohort definitions

- Singleton deliveries to BC residents from April 1, 2008 to December 31, 2010 (n=118,200)
 - Probabilistic linkage to confirmed or probable prenatal laboratory records (12 weeks pre-conception to 45 weeks post-conception, n=112,525)
 - iPHIS data were added where links occurred
- Singleton live births to BC residents outside Vancouver and Richmond
 - Probabilistic linkage to immunization records from iPHIS

Definitions

- HBV tested: PDR HBsAg testing flag OR confirmed/probable prenatal lab sample
- HBV-affected delivery:
 - any prenatal lab result was HBsAg reactive;
 - any prenatal lab sample was tested for HBeAg;
 - woman was HBV positive in iPHIS;
 - BCPDR indicated positive HBsAg status; or
 - delivery admission included an ICD-10-CA diagnosis code for acute or chronic Hepatitis B, or viral hepatitis carrier status

Results



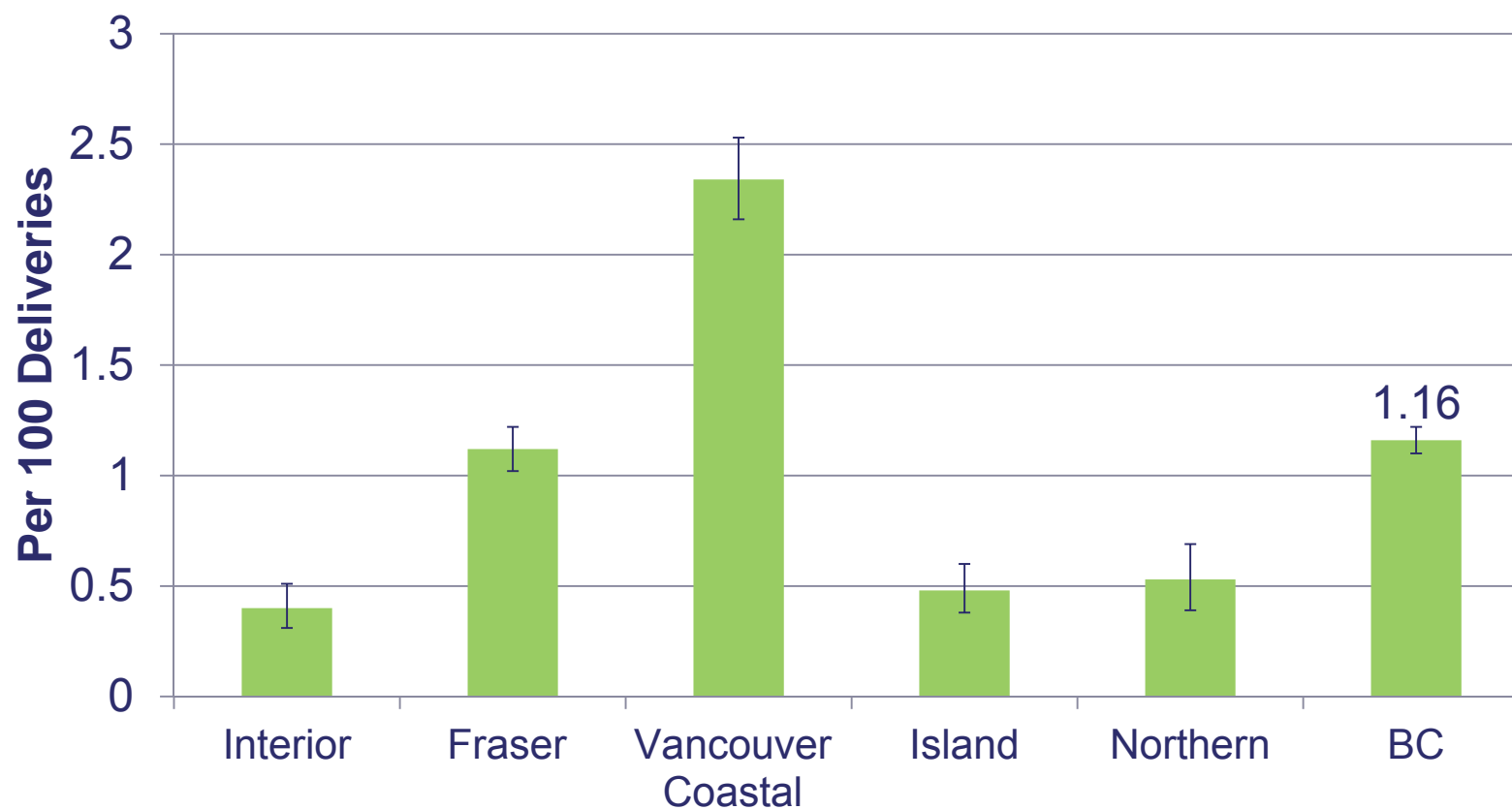
Prenatal HBsAg Testing in BC

April 1, 2008 – December 31, 2010

	N	%	N	Gestational age at testing Median (IQR)
British Columbia	118,200	99.1	112,525	9 (6-12)
Resident Health Authority				
Interior	17,448	98.7	16,571	9 (6-12)
Fraser	46,129	99.2	44,201	9 (6-12)
Coastal	27,678	99.4	26,027	9 (6-12)
Island	17,125	98.7	16,291	8 (6-11)
Northern	9,698	98.6	9,332	10 (7-13)
Maternal age				
<25	20,437	98.8	19,556	10 (7-14)
25-29	33,333	99.1	31,856	9 (6-12)
30-34	37,677	99.2	36,214	9 (6-11)
35-39	21,528	99.1	20,489	9 (6-11)
≥40	4,719	98.8	4,410	9 (6-11)

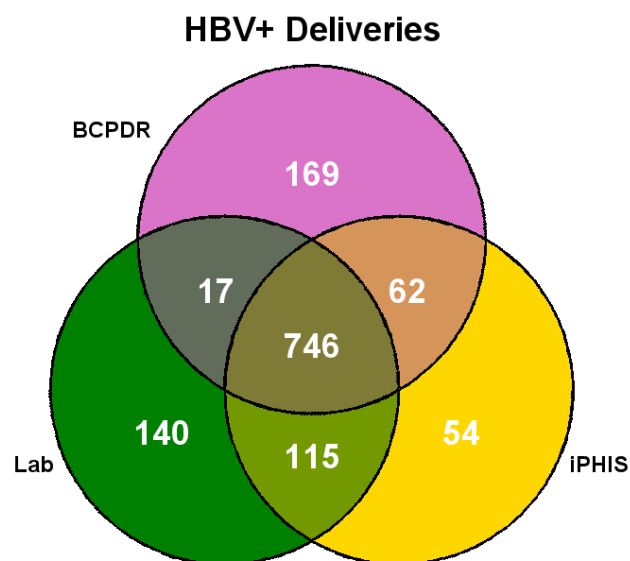
Prevalence of HBV in Pregnancy in BC

April 1, 2008 – December 31, 2010



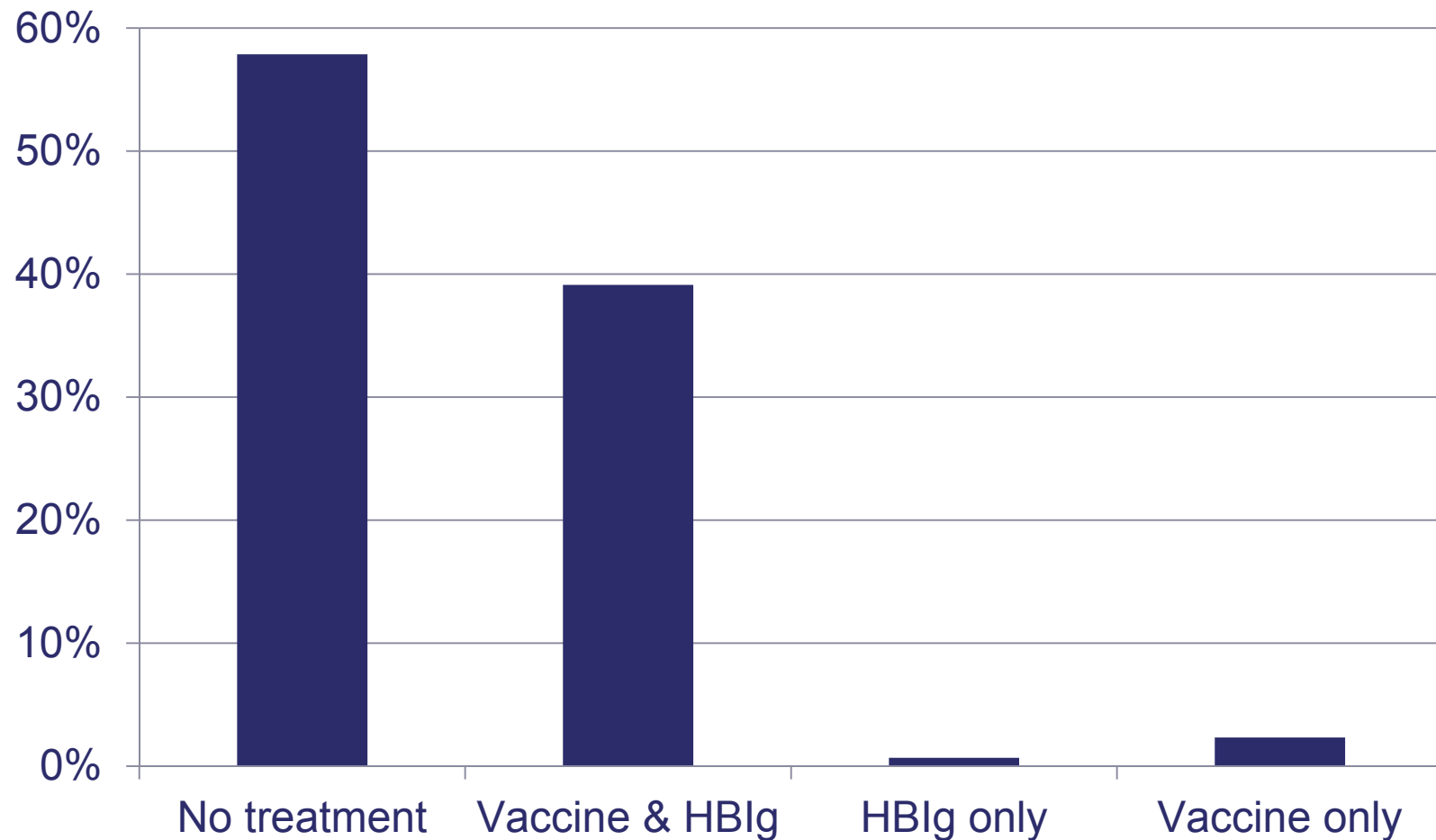
Prevalence of Perinatal HBV in BC by Data Source April 1, 2008 – December 31, 2010

	HBV Cases	Rate (95% CI)
BCPDR	994	0.88 (0.83-0.94)
MYSIS/Sunquest	1,018	0.90 (0.85-0.96)
iPHIS	977	0.87 (0.81-0.92)
TOTAL	1,303	1.16 (1.10-1.22)



Neonatal Hepatitis B Prophylaxis in BC

April 1, 2008 – December 31, 2010 (n=731)



Discussion and implications

- >98% of deliveries are screened for Hepatitis B during pregnancy
- 1.2% of deliveries in BC are HBV-involved
 - Differences by maternal age and area of residence
 - Different prevalence estimates by data source
- 57% of babies born to women with HBV do not have prophylaxis recorded in iPHIS

Next steps

- Confirm process for private labs doing HBsAg testing
 - Notification and serum sample to BCCDC PHL
- Can laboratory requisition forms more clearly indicate whether tests are done as part of prenatal screening?
- Troubleshoot information exchange re: neonatal prophylaxis
 - Acute care → public health → iPHIS / PARIS / Panorama

Acknowledgements and collaborators

- BCCDC: Jane Buxton, Samara David, Margot Kuo, Laura McDougall, Jason Wong
- PSBC: Brooke Kinniburgh, Lily Lee
- PHSA: Seyed Ali Mussavi Rizi, Amanda Yu

Questions?

Prevalence and Odds of HBV per 100 singleton deliveries ; British Columbia, April 1, 2008 – December 31, 2010

	n	% (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)
British Columbia	1,303	1.2 (1.1-1.2)		
Interior	67	0.4 (0.3-0.5)	0.35 (0.27-0.46)	0.37 (0.28-0.48)
Fraser	493	1.1 (1.0-1.2)	Ref.	Ref.
Coastal	610	2.3 (2.2-2.5)	2.08 (1.85-2.35)	2.00 (1.76-2.27)
Island	79	0.5 (0.4-0.6)	0.43 (0.34-0.55)	0.44 (0.35-0.56)
Northern	49	0.5 (0.4-0.7)	0.44 (0.32-0.61)	0.48 (0.35-0.65)
Maternal age				
<25	120	0.6 (0.5-0.7)	0.64 (0.52-0.79)	0.76 (0.61-0.94)
25-29	314	1.0 (0.9-1.1)	Ref.	Ref.
30-34	472	1.3 (1.2-1.4)	1.31 (1.15-1.51)	1.13 (0.98-1.30)
35-39	295	1.4 (1.3-1.6)	1.47 (1.26-1.73)	1.13 (0.96-1.34)
≥40	102	2.3 (1.9-2.8)	2.35 (1.88-2.93)	1.75 (1.39-2.19)