Enhanced Surveillance of Acute and Chronic Hepatitis B and C in Canada, 1999-2001

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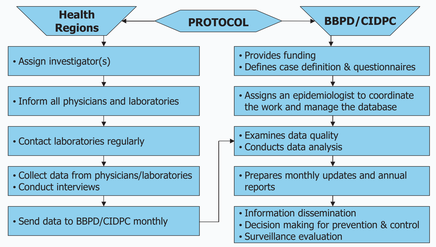
Background

- Hepatitis B (HB) and hepatitis C (HC) are reportable through the National Notifiable Disease Reporting System in Canada.
- The usefulness of the data is affected by the nature of the infections, the inconsistency in reporting practices across jurisdictions, and the lack of information on the risk factors associated with transmission.
- The enhanced surveillance of acute and chronic HB and HC was established in 1998 to address the limitations of routine surveillance. There are currently 7 sites across Canada participating in the enhanced surveillance program.
- As of April, 2002 the enhanced surveillance system has been fully integrated with the strain surveillance system of the National Microbiology Lab (NML).

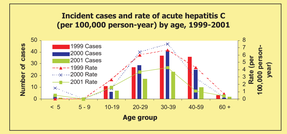
OPERATIONAL PROCEDURE

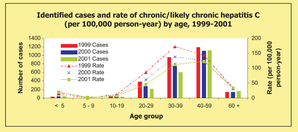


Data Analysis

- Data from participating sites are combined and exported from MSAccess to a SAS database.
- Data quality checks are routinely performed and efforts are made to identify and eliminate duplicate records at the local and national level.
- Age and gender-specific incidence rates for acute and chronic HB and HC are calculated.
- Distribution of mutually exclusive risk factors is determined based on a ranking of risk factors by transmission efficiency.

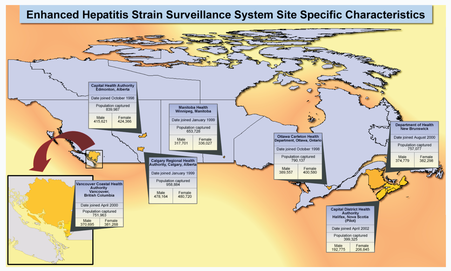
Hepatitis C





Estimation of Acute Hepatitis B and Hepatitis C in Canada

- Estimate approximately 600 and 970 clinically recognized acute HB and HC cases annually.
- Assuming that 50% of HB and 75%-80% of HC infections are asymptomatic, it is estimated that there about 1,200 new HB and 4,300 new HC infections occurring each year in Canada.



Case Definitions

Acute Hepatitis B

- Discrete onset of clinical symptoms **and**
- Serum aminotransferase levels > 2.5 times the normal **and**
- HBsAg positive or IgM anti-HBc positive (if done) **and**
- IgM anti-HAV negative (if done)
- Seroconversion within one year

Likely Acute:

- Does not have symptoms or elevated ALT/AST but is IgM anti-HBc positive

Acute Hepatitis C

- Discrete onset of clinical symptoms **and**
- Serum aminotransferase levels > 2.5 times the normal **and**
- IgM anti-HAV negative (if done) **and**
- IgM anti-HBc negative (if done) or HBsAg negative **and**
- anti-HCV positive (confirmed by a supplemental test) **or**
- Seroconversion within one year

Objectives

- Estimate the incidence of acute HB and HC
- To describe the epidemiology of chronic HB and HC infection
- Investigate the risk factors associated with disease transmission
- Monitor the trends in incidence rates
- Evaluate the effectiveness of preventive strategies and public health responses
- Provide fundamental information to support evidence-based decision making as it concerns the prevention and control of HB and HC in Canada

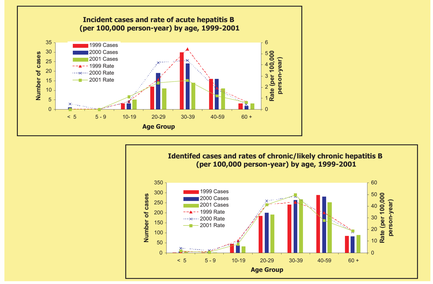
Methodology

- A consensus questionnaire for HB and HC cases is used to capture relevant clinical, laboratory and epidemiologic data.
- Acute cases of HB and HC are interviewed by site investigators in order to assess risk factor history.
- Completed questionnaires and selected data fields are transferred electronically to HCAID/CIDPC to be incorporated into the national database.

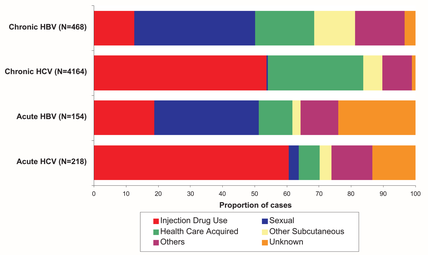
Rates of Acute and Chronic Hepatitis B and C by Sex and Age-group, 1999-2001 combined

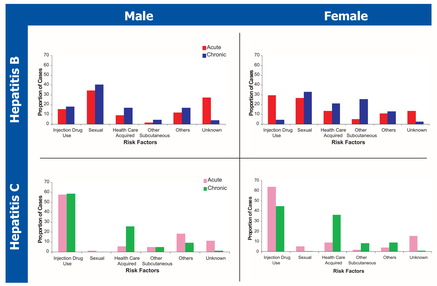
Age Group	Acute			Chronic		
	Male	Female	Total	Male	Female	Total
Hepatitis B (per 100,000 person-year)						
< 5	0.29	0.00	0.15	1.46	2.78	2.11
5-9	0.00	0.00	0.00	2.22	1.45	1.84
10-19	0.69	0.87	0.78	15.88	12.60	14.28
20-29	5.54	1.37	3.45	51.36	66.45	58.94
30-39	6.62	2.12	4.37	76.34	60.41	68.40
40-59	2.66	1.19	1.92	58.97	40.57	49.74
60 +	1.01	0.11	0.50	36.09	24.10	29.31
Total	**2.98**	**1.02**	**1.99**	**44.68**	**36.89**	**40.73**
Hepatitis C (per 100,000 person-year)						
< 5	0.59	0.62	0.60	17.57	16.70	17.15
5-9	0.00	0.00	0.00	1.38	1.45	1.42
10-19	0.83	2.90	1.84	8.42	11.30	9.83
20-29	5.79	5.37	5.58	73.52	62.58	68.03
30-39	7.56	4.55	6.06	188.50	108.00	148.40
40-59	2.93	2.31	2.62	202.70	81.14	141.70
60 +	0.87	0.00	0.38	42.61	29.90	35.43
Total	**3.28**	**2.59**	**2.93**	**108.90**	**57.22**	**82.72**

Hepatitis B



Distribution of Mutually Exclusive Risk Factors for Acute and Chronic Hepatitis B and Hepatitis C, 1999-2001 Combined





Implications for Prevention and Control

- **Injection drug use is the most important risk factor for HC and a significant risk factor for HB in Canada**
  - need to improve harm reduction strategies
  - need to prevent initiation of drug use
  - need to improve education and outreach
  - need to adopt multi-faceted approaches
- **Risky sexual behaviour is an important risk factor for HB**
  - need to improve education particularly among MSM
  - outreach to actively identify unvaccinated persons from high risk groups for immunization
- **A significant proportion of cases of HB and HC have no known risk factors**
  - need targeted research to identify all possible modes of transmission to effectively prevent and control these infections

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