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Executive Summary

In May 2007, the Ministry of Health (MoH) released *Healthy Pathways Forward: A Strategic Integrated Approach to Viral Hepatitis in BC*. This progress report summarizes British Columbia’s progress towards the four goals originally outlined in *Healthy Pathways Forward*. It also highlights new information, and identifies new opportunities for action.

Since 2007, acute hepatitis A (HAV) rates have fallen from 1.7 to 1.0 per 100,000 people; hepatitis B (HBV) rates have fallen from 0.9 to 0.6 per 100,000 people; and hepatitis C (HCV) rates have fallen from 67.3 to 54.9 per 100,000 people. Initiatives in B.C. have contributed to this decline and have increased our ability to measure hepatitis rates. Changes in hepatitis rates are also influenced by international and national trends, such as increases in HBV vaccination rates and elimination of potential risk factors.

Between 2007 and 2010, initiatives in B.C. to decrease the rates of viral hepatitis have focused on four areas:

- Expanding program reach and engaging vulnerable groups through integrated community-based prevention and care;
- Enhancing public health programs;
- Sharing new information with people who have viral hepatitis as well as their care providers; and
- Improving surveillance and the ability to evaluate programs.

Collaboration among the Provincial Health Services Authority’s (PHSA) BC Centre for Disease Control (BCCDC), regional health authorities, community organizations and those living with viral hepatitis is an important part of successfully addressing viral hepatitis in B.C. *Healthy Pathways Forward* identified ways to help reduce the number of new viral hepatitis infections and lessen the impact of these viruses on individuals living with hepatitis.

The four goals discussed in *Healthy Pathways Forward*, are outlined below. B.C.’s progress toward meeting those goals is also summarized.

**Goal 1: Prevent new hepatitis infections and reduce the risk of those infected progressing to serious liver disease**

Since *Healthy Pathways Forward* was released in 2007, a number of resources have been invested in HCV prevention. These include harm reduction programs and education for at-risk groups and health care providers:

- Increases in harm reduction supply delivery, including providing sterile needles and condoms to those who use intravenous drugs (IDU);
- Expansion of mental health and substance use services, including methadone maintenance treatment;
• Continued access to supervised injection at Insite and the Dr. Peter Centre;
• Support for trials of prescribed opioids (the North American Opiate Medication Initiative, or NAOMI);
• Three new HBV drug therapies (adefovir, tenofovir and entecavir) were added to the BC PharmaCare formulary; and
• Enhanced epidemic tracking and research on risk behaviours among IDU.

**Goal 2: Enhance reach and engage vulnerable populations in the health promotion, prevention, care, treatment and support service continuum**

Since 2007, progress has been made towards expanding the reach of viral hepatitis programming and engaging vulnerable populations:

• Vaccination against HAV continues to be available for those who are vulnerable to infection, and HAV infection rates continue to fall;
• As of 2010, 83 per cent of two year olds were fully vaccinated against HBV;
• The number of first time and repeat testers for HCV has increased steadily since 2007. This suggests that access to testing has improved;
• Enhanced outreach programs in Prince George and Kelowna; and
• Community-based prevention and care initiatives suggest that strong effective partnerships are needed to carry out effective health promotion, prevention, care, treatment and support activities.

**Goal 3: Strengthen the system’s capacity to respond**

Since 2007, the following progress has been made towards strengthening the system’s capacity to respond to viral hepatitis infections:

• Improved viral hepatitis surveillance tools, improved testing to detect infection, and increased access to viral hepatitis treatment; and
• Better capacity to measure healthcare costs and outcomes for people living with viral hepatitis, including factors such as quality of life and mortality related to HCV infection.

**Goal 4: Create seamless service delivery**

Since 2007, the following progress has been made towards creating seamless service delivery:

• The health system has expanded reach to vulnerable groups. This expansion has increased access to services for individuals who are living with or at-risk for viral hepatitis, and is supported by effective partnerships and integrated services.
• Ongoing initiatives to improve communication between health care practitioners and those affected by viral hepatitis. This includes the development of culturally appropriate health resources aimed at improving communication and providing information to help individuals navigate the health system.

The ministry and specialized provincial agencies like the BCCDC will continue to provide leadership and work with regional health authorities and other relevant stakeholders to achieve these goals. Improvements in service efficiency and health outcomes for British Columbians will continue to be measured through regular progress reporting. Because viral hepatitis affects vulnerable groups disproportionately, it is crucial that the collaborative integrated programs that reach and engage these groups in health promotion, prevention, harm reduction, care, treatment and support are enhanced.

Introduction and Background

Hepatitis is the general term used to describe liver inflammation. There are many different forms of hepatitis. It is most commonly caused by viruses. In B.C., hepatitis A, B and C are the most common types of hepatitis.

In May 2007, the Ministry of Health released Healthy Pathways Forward: A Strategic Integrated Approach to Viral Hepatitis. This document outlines the provincial strategy to address viral hepatitis in B.C., which involves complementing and supporting community and health authority initiatives. It outlines four main health system goals and strategic priorities for immediate action. These goals and priorities support service integration, health promotion, and the engagement of vulnerable groups and communities. Collectively, these goals are designed to reduce new cases of hepatitis and minimize the impact of these viruses. Healthy Pathways Forward was developed by MoH, and was the result of collaboration between the BCCDC, regional health authorities, community partners, clinicians, and individuals living with or vulnerable to viral hepatitis.

At the time that Healthy Pathways Forward was released, HAV and acute HBV were managed effectively through vaccination and education initiatives. This included the
HBV vaccination program and HAV vaccinations targeted at vulnerable populations. Although vaccine programs were very effective for preventing new HBV infections, the number of people with chronic HBV infections continued to grow. This trend was particularly evident in new Canadians who had been infected in their country of birth.

In B.C., rates of newly reported HCV (which is not vaccine preventable) remained much higher than national rates. The majority of people diagnosed with HCV infection reported a history of intravenous drug use, had immigrated from an area where HCV was endemic, or had previously been exposed to contaminated blood products. *Healthy Pathways Forward* suggested that chronic HBV infections and the prevention and control of HCV infections be managed through collaborative partnerships and integration of services.

Five regional health authorities and one provincial health authority currently share responsibility for collaborating with community and planning, delivering and evaluating prevention and care services to achieve the goals established in *Healthy Pathways Forward*. To this end, Clinical Prevention Services at the BCCDC:

- Collaborates with regional health authorities to deliver HAV and HBV vaccination programs;
- Develops and refines best practices through integrated projects in multiple settings;
- Collaborates on education and applied research;
- Analyzes surveillance and other data to help health authorities develop and refine programs such as targeted testing; and
- Assists in evaluating outcomes.

Community-based organizations play an important role in the engagement and support of individuals living with or at risk for viral hepatitis. These organizations connect people with education and prevention services, and advocate for the most marginalized individuals.

*Healthy Pathways Forward* made a commitment to formal progress reporting. This document supports this commitment by summarizing B.C.’s progress with the four goals outlined in the original document. This progress report recommends future opportunities for increasing the efficiency of services and enhancing outcomes in B.C. It also presents a summary of the indicators that are used to monitor and demonstrate progress towards the four goals and priorities outlined in *Healthy Pathways Forward*.

Although the document reports on hepatitis related activities between 2007 and 2010, this report is also consistent with evolving Ministry of Health priorities which include provincial and regional health authority and Lower Mainland Consolidation efforts and the restructuring by BCCDC to better integrate services. This integration supports sustainable healthcare aimed at maximizing prevention and treatment. For example, HAV vaccine will be routinely offered to Aboriginal infants. A promising array of new treatments could dramatically improve outcomes for those chronically infected with HBV and potentially cure most cases of HCV within the next decade.
Goal 1: Prevent new hepatitis infections and reduce the risk of those infected progressing to serious liver disease

**Progress since May 2007:**

The BCCDC is the central surveillance and reporting centre for hepatitis infections. It continues to track newly identified HAV, HBV and HCV infections. The BCCDC and the public health laboratory inform regional health authority staff of new HCV infections and co-infections with other communicable disease such as HIV. The BCCDC aims to inform hepatitis prevention and harm reduction programming, as well as support monitoring and evaluation efforts.

Since 2007, new cases of HCV and incidences of acute and chronic HBV in B.C. have declined. This decrease in hepatitis rates has likely been influenced by multiple factors. This includes increased HBV immunization in countries where hepatitis is endemic and among those who use illegal drugs, and a shift from injection towards other drug delivery methods such as smoking.

Improvements to infectious disease surveillance and data analysis have helped identify the common risk factors associated with hepatitis transmission in vulnerable populations. Improvement in surveillance also informs work that addresses some of the major contributors to the transmission of communicable disease. These factors include broader health inequities and social determinants of health. This data confirms the need for continued service integration.

The number of locations in B.C. where harm reduction supplies (including new items such as cookers) are available for IDU has increased. Mental health and substance use services have also expanded, including methadone maintenance therapy. Innovative programs, such as supervised injection sites at Insite and the Dr. Peter Centre, continue to be supported.

With the help of researchers and health providers, the Province has explored innovative approaches to reducing the risks associated with hepatitis. This includes the North American Opiate Medication Initiative (NAOMI), and the proposed Study to Access Long-term Opioid Maintenance Effectiveness (SALOME), which has recently received approval from Health Canada.

The Harm Reduction Strategies and Services Committee (HRSS) – which oversees B.C.’s publicly funded harm reduction supplies program – has created a Harm Reduction Tool Kit. This is designed for front-line workers and volunteers who distribute safer sex and drug use supplies. The HRSS continues to work with the Province to guarantee equitable and appropriate access to harm reduction supplies and further improve harm reduction services across B.C.

1 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.
Since 2008, three new HBV drug therapies were added to the BC PharmaCare drug formulary: adefovir (Hepsera®), entecavir (Baraclude®) and tenofovir (Viread®). These drugs help prevent individuals with hepatitis from developing serious liver disease.

**Acute hepatitis B cases in B.C., 2000-2010**

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<thead>
<tr>
<th>Year</th>
<th>BC Hepatitis B: Acute Reports</th>
<th>BC Hepatitis B: Acute Rate</th>
<th>Canadian Acute Hepatitis B Rate</th>
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<td></td>
</tr>
<tr>
<td>2010</td>
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**Newly identified Hepatitis C cases in B.C., 2000-2010**

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<thead>
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<th>Year</th>
<th>BC Hepatitis C Reports</th>
<th>BC Hepatitis C Rate</th>
<th>Canadian Hepatitis C Rate*</th>
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<td>2010</td>
<td></td>
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</tr>
</tbody>
</table>

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3 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.

4 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.
Healthcare workers and first responders are the most at risk of occupational exposure to viral hepatitis infection. A vaccine as well as post-exposure immunoprophylaxis is available to prevent HBV. While there is no vaccine for HCV, the risk of infection per exposure is less than two percent, and approximately 25 percent of those who get the infection will clear the virus on their own. Post-exposure protocols can either prevent chronic infection or cure most infections. A review of first responder and healthcare worker claims of occupational exposure to viral hepatitis show relatively few over a 24 year period, with a small number subsequently developing HBV or HCV.

**Future Actions:**

With the help of primary care practitioners, the BCCDC, and other valuable partners, the regional health authorities will implement integrated public health follow-up for acute HCV cases. This includes contact tracing, case finding, disease spread and risk reduction counselling. They will use methods that are similar to those used for HIV infection. Integrated public health follow-up will help encourage at-risk individuals to get tested, and help encourage recently infected individuals to receive early treatment.

In addition, this partnership will use social marketing methods to increase public awareness of viral hepatitis transmission, and correct misperceptions and stereotypes. By doing so, this partnership will facilitate the removal of barriers to hepatitis testing and treatment.

Training on universal precautions and risk when dealing with blood and body fluids to prevent occupational exposures, as well as immediate clinical care in the few cases when exposure cannot be prevented, has been shown to be the best method to prevent new viral hepatitis infections and ensure that infection does not lead to serious liver disease. The BCCDC is working closely with the Justice Institute of B.C. to develop educational modules and occupational health protocols to better inform first responders of the risks of exposure to viral hepatitis in their jobs and how best to prevent transmission.

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5 Dr. Peter Rothfels, WorksafeBC, Personal Communication to Provincial Health Officer, 2011.
Goal 2: Enhance program reach and engagement of vulnerable populations in the health promotion, prevention, care, treatment and support service continuum

Progress since May 2007:

The Province continues to provide at-risk individuals with better access to HAV vaccinations. Within B.C., rates of reported HAV infection continue to fall. Additionally, aggressive management of HAV outbreaks has prevented widespread transmission. B.C.’s HBV infant immunization program was introduced in 2001. By 2010, 83 per cent of two year olds were fully immunized against HBV.6

Surveillance suggests that an increasing number of people are getting tested for HCV. This includes both first time and repeat testers, and suggests that people have better access to HCV testing.7 However, the number of people receiving HCV treatment has not changed. This may be because some British Columbians are waiting for new treatment options.

Between 2008 and 2010, financial and staff resources have been invested in integrated prevention and care projects in the Vancouver Island, Interior, Fraser, and Northern health authorities. Project collaborators focused on using partnerships to increase access to, as well as capacity for, primary viral hepatitis prevention, specialty clinical assessments, chronic illness management and treatment. These projects included a broad range of areas – including public health, primary care, and mental health and substance use – and supported increased access and program reach. Participants in these projects experienced positive outcomes.8

Annual number of first-time and repeat anti-HCV testers, B.C., 1992 – 20099

6 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.
7 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.
9 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.
The BCCDC helps individuals who contracted HCV through infected blood products access compensation. A 1-800 line dedicated to helping these individuals manoeuvre the process of receiving compensation has now become a general help line for all questions related to viral hepatitis.

The BCCDC website connects people with self-help resources, including links to human rights information, advocacy organizations and educational materials for nurses, patients and other care providers. They continue to develop culturally appropriate educational resources for priority groups, which includes groups with low literacy rates and unstable living conditions.

Community organizations provide essential support and services for individuals in B.C. who are living with or at risk for viral hepatitis. The individuals who work in these organizations are important partners in programs and initiatives designed to prevent viral hepatitis, engage at-risk and hard-to-reach people, and raise awareness among the general public.

**Future Actions:**

With the support of regional health authorities, the integrated care projects have been transitioned into ongoing community-based prevention and care programs. These programs are designed to integrate primary care services and include mental health and substance use support. BCCDC resources will be redirected to support the transition towards prevention initiatives.

Partners will work collaboratively to develop health resources for populations at risk for blood-borne chronic diseases. They will conduct research to assess and measure barriers to accessing services. This will help determine how and why people decide to access care or treatment, and will support health care practitioners and policy makers to improve how hard-to-reach populations access and engage with services.

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10 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.
Partners will also evaluate the effectiveness of various viral hepatitis educational platforms designed for care providers, including face-to-face instruction and online. The BCCDC will support the development of national standards and competencies for Viral Hepatitis Nursing Practice, and re-evaluate the educational needs of front line nurses. A Provincial Community of Practice network will support sharing and implementation of leading practices between health and social service professionals who work in geographically dispersed areas. In addition, effective training and education will help front line workers better engage individuals in health promotion, prevention, care, treatment and support.
Goal 3: Strengthen the system’s capacity to respond

**Progress since May 2007:**

The BCCDC has worked with health system partners to enhance B.C.’s viral hepatitis surveillance capacity. This partnership has achieved the following goals:

- Improved identification of laboratory-diagnosed acute HCV and HBV cases. As a result, physicians and medical health officers are now informed daily of new positive tests;

- Increased use of prenatal testing to track pregnant women who have chronic HBV infections in order to provide the best preventative care for their infants;

- Enhanced HCV and HIV analysis among individuals who are tested repeatedly for viral hepatitis in order to support and evaluate prevention efforts; and

- More accurate monitoring of prenatal communicable disease testing to ensure women are screened appropriately and service gaps are identified.

Anonymous linkages between surveillance and other healthcare datasets have enabled the analysis of multiple outputs and outcomes related to viral hepatitis. This includes:

- Better understanding of the burden associated with HCV. Partnership with university researchers has led to estimates of morbidity and mortality in individuals infected with HCV. This research examined a cohort of individuals who underwent HCV antibody testing between 1992 and 2004. It analysed HCV related health costs, out of pocket costs, quality of life, and methadone utilization;

- Better understanding of the relationship between HCV infection and mental health or substance use problems through data linkage;

- Reduced harm to patients through the timely identification of individuals who do not respond to HCV therapy. This is accomplished through partnership between PharmaCare and the PHSA laboratory; and

- Improved understanding of hepatitis as a chronic illness and the stereotypes or discrimination experienced by persons with HCV.

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Laboratory initiatives have led to better use of resources, including an improvement in standard operating procedures and a reduction in duplicate HCV testing. This helped increase research capacity, knowledge exchange, and multi-sectoral collaboration. For example, collaboration between Vancouver Hospital and Health Sciences Centre’s Gastroenterology Division and the BCCDC has supported viral hepatitis education projects for front-line health and social care professionals throughout B.C. This partnership increased system capacity to test and treat viral hepatitis, and expand secondary prevention activities.

The availability of viral hepatitis education for health and social service students and professionals has increased. Educational information on viral hepatitis is available through formal teaching at affiliated universities, Canadian Institute for Health Research-funded national Hepatitis C Research student mentoring, graduate student supervision, presentations, video conferencing, workshops, quarterly newsletters and peer reviewed publications. In addition, the BCCDC worked with the British Columbia Institute of Technology to develop an on-line Interdisciplinary Viral Hepatology course for nurses and social service providers.

**Future Actions:**

Sustained data linkages will be made that focus on individuals who are undergoing testing for HBV, HIV, and TB. This also includes linkages with key MOH datasets to improve the evaluation of population health and prevention interventions related to viral hepatitis.

New drug treatments that improve chances of curing HCV and suppressing HBV are being developed. Better decision making for public coverage of these new drug therapies will be enhanced through proposed anonymous linkages between surveillance and drug therapy data. In addition, the province will introduce HBV resistance testing across the province to enable better drug treatment choices.

Increased exchange of new information and integrated prevention and care initiatives will allow the right information to be available to individuals who rely on it to care and support those living with viral hepatitis.

Linkages between HIV and HCV testing data have been used to estimate the prevalence of HIV-HCV co-infection, as well as the time between diagnosis of either infection and HCV-HIV co-infection. Approximately 50 per cent of co-infected individuals were initially diagnosed with HCV and subsequently diagnosed with HIV within a median of 3.5 years. (Buxton, J. et al, 2010) This suggests that, in order to prevent subsequent HIV infection, HCV mono-infected individuals should receive intensive prevention programming and support. Effective HIV screening for individuals with HCV within three months of the initial HCV diagnosis is being monitored as an outcome indicator for B.C.’s Seek and Treat to Optimally Prevent HIV/AIDS (STOP HIV) pilot.
Goal 4: Create seamless service delivery

Progress since May 2007:

The health system has improved reach and access to viral hepatitis prevention, care, treatment and support. Public health nurses contact and interview individuals acutely infected with HBV and assist with HCV. This helps to identify current risk factors in those who have been infected recently (incident cases), and provides prevention counselling and harm reduction support to minimize ongoing transmission of viral hepatitis. A partnership with the Public Health Agency of Canada has improved the identification and tracking of risk factors that are related to acute HBV and HCV.

Collaboration between the BCCDC and the PHSA Centres for Chronic Disease Prevention has identified health inequalities for immigrants, refugees, individuals in corrections, and individuals requiring mental health and substance use support. These observations will inform the development of effective support activities.

Health resource materials have been developed and disseminated to improve communication between health care practitioners and individuals affected by viral hepatitis. These materials support effective communication and navigation through the health system, and are available in English and French languages, and are culturally appropriate for Aboriginal audiences.

In order to confirm the ongoing effectiveness of universal HBV and targeted HAV immunization programs, the BCCDC continues to track acute and chronic HBV and HAV infections. In collaboration with regional health authorities, the BCCDC analyzes HCV and HIV testing data to plan and identify issues with service access. The recognition that HCV infection can indicate a risk for HIV infection resulted in a linkage with the STOP HIV initiative, which aims to identify those at risk for HIV and potentially reducing incidence of both HIV and HCV. STOP HIV will report on the progress in this area in the next 24 - 26 months.

Although service delivery in the province has improved since Healthy Pathways Forward was released in 2007, there are still opportunities to enhance services. In order to ensure continuity of care, including access to harm reduction, testing and treatment, public health prevention services need better integration with the corrections system. In addition, there are opportunities to streamline the prevention, testing and treatment services for individuals who have recently immigrated to Canada.

To comprehensively engage hard-to-reach groups and meet the needs of those living with viral hepatitis, partnerships have been the key to success in integrated prevention and care demonstration projects in the Fraser, Interior, Northern and Vancouver Island Health Authorities. Evaluation of these partnerships – collaboration among public health, primary care, mental health and substance use and an array of community partners - has demonstrated the enhanced health outcomes and highlighted the value of integrated care.

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16 BC Centre for Disease Control. Communicable Disease Prevention and Control Services.

17 The Seek and Treat to Optimally Prevent HIV/AIDS (STOP HIV) pilot project is a $48M, four year provincially funded initiative to expand the reach of HIV testing and treatment among at-risk and marginalized people in Vancouver and Prince George not previously engaged in care, or lost to care follow up.
Future Actions:

All partners will work together to develop a standardized response for new acute HCV infections.

The province will work with multiple jurisdictions to provide seamless service delivery to vulnerable populations. This includes individuals who are leaving corrections, new immigrants and refugees. Progress in addressing viral hepatitis among Aboriginal British Columbians will be addressed in a tripartite manner.

Health system partners will explore opportunities to measure HCV treatment uptake and cost-effectiveness. This will ensure more efficient treatment programming for individuals with viral hepatitis. Data linkage with the Vancouver Island Health Authority will result in more comprehensive HCV and HBV testing data, which will help to inform program planning.

The BCCDC will regularly update HBV and HCV guidelines to reflect and include new information. Effective communications strategies will translate evidence into tools, advice and support for those affected, front-line health care professionals, policy makers and community. These strategies will help eliminate gaps in the continuum of care, improve access to care and help people navigate health services.
Summary

Viral hepatitis incidence and prevalence rates in B.C. are decreasing and the Province’s capacity to treat and manage chronic infections effectively has improved. Since 2007, regional health authorities, the BCCDC, community organizations and other health and social service system partners have worked to improve the integration of prevention and care services for people affected by and vulnerable to viral hepatitis. Reductions in HCV incidence and prevalence are the result of multifaceted approaches taken by many partners. These approaches incorporate prevention, harm reduction and treatment to reduce the health inequities that vulnerable populations experience.

Research has confirmed that individuals who are infected or at-risk for contracting HCV are also susceptible to a number of acute and chronic conditions. This includes HIV and other sexually transmitted infections, tuberculosis, substance use problems, and mental illness. Given that vulnerable populations experience disproportionate health burdens, there is a critical need to develop programs that support these individuals across a range of health care needs. This includes broad health promotion activities that are linked to prevention interventions carried out at every individual encounter.

Appendix: Indicators

Indicator 1: HCV incidence among repeat testers

Description: A recently-acquired infection is defined as a positive test with a negative test on record within the previous 24 months, indicating that the individual has contracted the infection within the last two years. This method identifies a particular group (repeat testers) as a high-risk population.

The BCCDC estimates HCV incidence trends by dividing the number of seroconversion cases (those who go from being uninfected to being infected with the virus), which represent the estimated number of recently acquired infections, by the number of repeat testers, which represent the estimated population at risk.

Key Message:

New HCV diagnoses among repeat testers are declining, and while annual rate of seroconversion in males is higher than in females, this gap is narrowing.

18 BC Centre for Disease Control. Communicable Disease Prevention and Control Services
**Indicator 2: Risk Factor Surveillance**

**Description:** The Enhanced Hepatitis Strain and Surveillance System project monitors acute HBV and HCV cases (those whose infection occurred within the previous 12 months). Since 2000, 185 individuals with acute HCV have been interviewed regarding recent and lifetime risk factors.

The 2007 to 2009 acute HCV risk factor interview results for 58 participants are:

- The percentage of individuals reporting injection drug use as a risk factor dropped 10 per cent (from 86 per cent to 76 per cent) when compared to previous years. Those reporting non-injection drug use increased by 13 per cent (from 77 per cent to 90 per cent);
- Time in correctional facilities is associated with acute HCV infection; 15 per cent of individual interviewed had been in correctional facilities, and a number of those who could not be interviewed were in correctional facilities at the time of referral for testing; and
- More than 75 per cent of individuals interviewed report three or more risk factors for HCV.

**Key Messages:**

A continued focus on youth and young adults with problematic substance use is critical, and there has been a shift from injection to non-injection drug use. There is a need to reach at-risk individuals with harm reduction messages and services related to multiple risk behaviours. To be effective and ensure continuity of services, public health prevention services should be integrated with the corrections system.

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18 BC Centre for Disease Control. Communicable Disease Prevention and Control Services
**Indicator 3:** HCV-HIV co-infection cases

**Description:** Co-infection of HIV and HCV is an indicator for risk behaviours, typically injection drug use and high-risk sexual activity. The number of new HCV-HIV co-infections is tracked quarterly.

**Key Message:**

*The number of HCV-HIV co-infections is decreasing in both males and females.*

**Indicator 4:** HCV-HIV co-infection timing of diagnosis

**Description:** In 2009, positive cases of HIV were linked to HCV laboratory testing data. Analysis showed that over half of HIV-infected people who were tested for HCV were HCV positive, and half of these individuals had been diagnosed with HCV first and was diagnosed with HIV a median of three and a half years later.

**Key Messages:**

*HCV diagnosis is a strong risk factor for subsequent infection with HIV. This highlights the importance of public health follow-up and harm reduction services for people identified with HCV to prevent subsequent HIV infection.*

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**Indicator 5**: Acute HBV cases\(^{22}\)

**Description**: Acute HBV is a reportable infection in B.C. When HBV is newly identified without symptoms of acute infection or a known history of past infection, follow-up testing in six months may be needed to identify it as acute or chronic infection.

Universal HBV vaccine for grade six students became available in B.C. in 1992, and the province-wide infant program was introduced in 2001. The first recipients of the adolescent school-based program were aged 28 years in 2009. The vaccine is also publicly funded for individuals at high risk of infection, including people who use injection drugs and men who have sex with men.

**Key Messages:**

*The annual number of reported acute HBV cases continues to decline. Only three acute HBV cases in 2009 were identified in persons less than 30 years of age.*

**Acute hepatitis B cases in B.C., 2000-2009**

![Graph showing the rate of acute hepatitis B cases in B.C. from 2000 to 2009.](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>BC Hepatitis B: Acute Reports</th>
<th>BC Hepatitis B: Acute Rate</th>
<th>Canadian Acute Hepatitis B Rate</th>
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<td>2001</td>
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<td>2007</td>
<td>40</td>
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<td>0.7</td>
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<tr>
<td>2008</td>
<td>31</td>
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<td>2009</td>
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</tr>
<tr>
<td>2010</td>
<td>11</td>
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<td>0.7</td>
</tr>
</tbody>
</table>

\(^{22}\) BC Centre for Disease Control. Communicable Disease Prevention and Control Services
**Indicator 6:** Hepatitis B chronic carrier rates

**Description:** Newly-diagnosed cases of chronic HBV in B.C. are largely a result of immigration from HBV-endemic regions of the world.

**Key Messages:**

B.C.'s newly-identified chronic hepatitis B rates have declined, and the annual increase in overall number of individuals with chronic HBV is slowing. Culturally-appropriate prevention efforts must target immigrant groups to encourage testing, monitoring, and treatment in order to reduce the substantial morbidity and mortality associated with progressive liver disease and liver cancer.

**Chronic hepatitis B newly-identified cases and rates by year, B.C., 2000 – 2009**

![Graph showing the decline of chronic hepatitis B cases and rates over time.](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>BC HBV: Chronic Carriers</th>
<th>BC HBV: Chronic Carrier Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>2653</td>
<td>65.7</td>
</tr>
<tr>
<td>2001</td>
<td>2555</td>
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<tr>
<td>2009</td>
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</tbody>
</table>

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**Indicator 7:** Acute Hepatitis A cases

**Description:** Acute HAV is a reportable infection in B.C. A large proportion of HAV cases are identified in persons who have travelled to countries where HAV is endemic. Although HAV vaccines are recommended to travelers, it is not publicly funded for this group.

**Key Message:**

The declining number of HAV cases can be attributed to the availability of a publicly funded vaccine for high-risk populations, which includes individuals who use injection drugs, men who have sex with men. There is post-exposure prophylaxis for those in contact with people infected with HAV to prevent transmission.

**Acute hepatitis A cases in B.C., 2000-2009**

<table>
<thead>
<tr>
<th>Year</th>
<th>BC Hepatitis A Reports</th>
<th>BC Hepatitis A Rate</th>
<th>Canadian Hepatitis A Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
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<td>1.4</td>
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<tr>
<td>2002</td>
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</tr>
<tr>
<td>2004</td>
<td>74</td>
<td>1.8</td>
<td>1.5</td>
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<tr>
<td>2005</td>
<td>51</td>
<td>1.2</td>
<td>1.1</td>
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<tr>
<td>2006</td>
<td>55</td>
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<td>1.4</td>
</tr>
<tr>
<td>2007</td>
<td>41</td>
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<td>0.8</td>
</tr>
<tr>
<td>2008</td>
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<td>0.9</td>
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<tr>
<td>2010</td>
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</tr>
</tbody>
</table>

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**Indicator 8:** Newly Identified Hepatitis C cases

**Description:** HCV is a reportable infection in B.C. Newly identified cases of HCV infection may include persons who have been infected either recently or in the past but who have only been tested recently. Persons may be tested for HCV as a result of ongoing or past risk factors, insurance purposes, or symptoms of liver disease.

**Key Message:**

*The annual number of newly identified HCV cases in B.C. declined modestly between 2008 and 2009. Although this rate remains above the Canadian rate, the diagnosis of HCV depends on availability and accessibility of testing.*

**Newly identified Hepatitis C cases in B.C., 2000-2009**

<table>
<thead>
<tr>
<th>Year</th>
<th>BC Hepatitis C Reports</th>
<th>BC Hepatitis C Rate</th>
<th>Canadian Hepatitis C Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
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<td>107.3</td>
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<tr>
<td>2003</td>
<td>3598</td>
<td>87.3</td>
<td>46.6</td>
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<tr>
<td>2004</td>
<td>3080</td>
<td>74.1</td>
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<tr>
<td>2005</td>
<td>2866</td>
<td>68.3</td>
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<tr>
<td>2006</td>
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<tr>
<td>2010</td>
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</tr>
</tbody>
</table>

**Indicator 9:** Healthcare costs associated with HCV infections

**Description:** Laboratory testing data was linked with data on what health services were used and what drugs were dispensed. This linkage supported an analysis of health services utilization, mortality, mental illness, pharmaceuticals usage, and costs of care. A study of healthcare costs among HCV testers provided baseline costing information to compare over time and with other provinces.

**Results:**

- The estimated healthcare costs associated with HCV infection among a large group of B.C. HCV testers over a seven-year period are substantial;

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• The incremental HCV-related direct healthcare costs are $1,850 per patient per year during early infection, and $6,000 per patient per year during the later stages of the disease; and
• Provincial spending on HCV-related healthcare is approximately $136 million per year.

Key Messages:
This is the first step in developing real-time health surveillance indicators for B.C.’s vulnerable groups, and is important for evaluating the effectiveness of interventions targeting at-risk groups. Healthcare costs for HCV-infected individuals are driven by age, co-morbidities, mental illness, illegal substance use, and HIV co-infection.

Indicator 10: Evaluation of methadone use among HCV testers

Description: Methadone use under the Methadone Maintenance Program was examined for a group of individuals who had also been tested for HCV infection. When compared to detoxification or no treatment, methadone maintenance therapy (MMT) significantly reduces opioid and other drug use, criminal activity, infectious disease risk behaviours and transmission, opioid overdose, and all causes of mortality. Methadone maintenance programs have been shown to protect people from acquiring infectious diseases and can also indirectly reduce the risk of infection to individuals who are not on methadone maintenance. When fewer people are infected, even if drug equipment is shared, the risk of transmission is reduced.

Results:
• Between 1992 and 2004, 8 per cent of individuals tested for HCV in B.C. were HCV positive (32,918 out of 404,941 individuals);
• Methadone was dispensed to 1 per cent of negative testers, and 21 per cent of positive testers (or 2.5 per cent (10,314) of all individuals tested for HCV);
• Of the 10,314 individuals who received methadone, 65 per cent (6,732) had a positive HCV test during the study period;
• At the time of MMT initiation, 70 per cent of the 10,314 had a known laboratory HCV status. Of this 70 per cent:
  • 2,596 (36 per cent) were HCV negative at the first methadone dispensation.
  • 4,638 (64 per cent) were HCV positive at the first methadone dispensation.
  • 288 persons became HCV positive after MMT initiation.

Key Messages:
Of the individuals who enter the BC Methadone Maintenance Program, many are already infected with HCV; however, the fact that some participants become HCV positive while on MMT indicates missed prevention opportunities.

**Indicator 11:** Rationalization of harm reduction supplies distribution

**Description:** The distribution of harm reduction products in B.C. was measured and compared across Health Service Delivery Areas by tracking harm reduction products that are purchased and distributed by the PHSA and regional health authorities. Harm reduction products include needles, syringes, sterile water vials, alcohol swabs, condoms, and lubricant. This accounted for regional population and rates of HCV infection (as an indirect measure of injection drug use prevalence). The provincial supply and demand ratio for needle and syringe units was also estimated.

The key findings from the analysis of harm reduction products distribution data between 2004 and 2006

- This comparison indicates that there is wide variation in distribution by area. It also indicates that while some Health Service Delivery Areas had very high rates of product distribution despite their population and HCV rates, other areas received a relatively low number of products when compared to their population and HCV rates.

- The provincial supply distribution was estimated to meet 21.5 per cent of the total number of units required to cover all injections among those who use injection drugs in B.C.

**Key Message:**

*The ordering and distribution of harm reduction product varies widely between health service delivery areas in B.C., and supply does not correspond with demand.*

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**Indicator 12:** Access to HCV testing

**Description:** The number of individuals undergoing either first time or repeat testing provides an estimate of access to HCV testing among individuals at-risk for infection. Increased HCV testing has enhanced the province's ability to detect recently-acquired infections and estimate the number of individuals in B.C. who are living with HCV infection. Additionally, testing behaviour varies between males and females.

**Key Message:**

*First-time and repeat HCV testing has increased, and females are testing more than males.*

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**Annual number of first-time and repeat anti-HCV testers, B.C., 1992 – 2009**

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**Annual number of anti-HCV testers, by sex, B.C., 1992 – 2009**

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**Indicator 13**: Development of mortality indicators

**Description:** Mortality was investigated among individuals who tested for HCV between 1992 and 2004. Four time-dependent risk groups were identified by their testing patterns and results. This study examined the key causes of death among the testing groups.

**Key Messages:**

Every category of HCV testers has a higher mortality risk than the general population in B.C. The increased mortality risk of HCV positive testers can be attributed to chronic infection from progressive liver disease and risk behaviours related to HCV acquisition. This includes injection drug use and HIV infection.

These risks will not be reduced by improvements in HCV treatment alone. The reduction of mortality risk in these individuals will require comprehensive prevention and harm reduction programming to reduce the impact of mental illness and problematic substance use behaviours. HCV treatment to prevent progression of chronic liver disease will also be necessary.

**Standardized mortality ratios (SMRs) and hazard ratios (HRs) with 95 per cent confidence intervals (CI) among four categories of HCV testers, 1992 – 2004**

<table>
<thead>
<tr>
<th>SNR</th>
<th>MNR</th>
<th>REAC</th>
<th>SERO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**SMRs with 95% CI**

- **SNR** – single negative testers (one non-reactive anti-HCV test);
- **MNR** - multiple negative testers (serial non-reactive anti-HCV tests);
- **REAC** - first-time positive testers (baseline reactive anti-HCV test); and
- **SERO** - seroconverters (non-reactive anti-HCV test followed by a reactive test), documenting incident infection

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**Indicator 14:** Partnership structure and functioning

**Description:** Four nurse-led integrated HCV prevention and care projects in B.C. were evaluated based on program development and composition, partnership structure and functioning, and client and/or population reach.

**Key Message:**

Partnerships, including a diverse set of service providers, are fundamental to providing comprehensive disease-management and support for individuals living with HCV.

**Number and Distribution of Partners in the Demonstration Projects by Partner Category**

Indicator 15: Client and population reach

Description: Evaluation of the integrated prevention and care projects showed that, on average, 25 per cent of individuals with HCV had been referred into specialist care since the projects began providing services. Kamloops began providing services in 2001; Prince George and Campbell River began in 2002; and Surrey (not shown) began in 2004. The maps below demonstrate the extent to which the projects covered rural and remote areas, which was one of the projects’ main objectives. A review of client referrals from each year of project operation suggests that each project site began operations with a large proportion of its clients residing in the project clinic community. Over time, however, program reach expanded to reach adjacent and remote communities.

Key Messages:

The projects provided people with local access and reached a significant number of individuals in smaller urban, rural and remote areas. Given that the literature suggests that few individuals infected with HCV ever get referred for specialty assessment, these findings are remarkable.
