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1.0 Executive Summary

Vancouver Coastal Health (VCH) primary care clinics provide holistic care to the single largest group of clients living with Hepatitis C (HCV) in Vancouver.

In 2013, our Vancouver primary care teams developed a framework for providing comprehensive client-centered care throughout the HCV journey (also known as the cascade of care) including pre-treatment, on-treatment, post-treatment, and end-of-life support for people diagnosed with HCV and associated liver disease as well as harm reduction strategies for those at risk of reinfection.

This framework was put in place to prepare for major advancements in HCV therapies. Beginning in 2015, there has been a significant increase in access to simple, effective HCV therapies with high cure rates and low side effect profiles. As a result, our teams have extended local models of care using the expertise of other established programs and of leaders in HCV care from across the city. Over this period, clinical experts from VCH and other programs, including infectious disease, hepatology and gastroenterology at Vancouver General Hospital and St. Paul’s Hospital provided specialized training to clinicians eager to take on HCV care delivery.

Our program is beginning to show improvements in the HCV cascade of care for VCH community sites, with 5,703 people tested for HCV since 2013. 42 percent of those tested had HCV positive results, and 258 individuals (approximately 4.5 percent of those known to be HCV positive) underwent therapy at our community sites in 2015-16. Of the 165 individuals who initiated and completed treatment with sufficient time for follow up within our reporting period, 151 individuals were successfully cured.

“Such an amazing program! I can’t even say how wonderful the staff are and how efficient this program is. It has saved my life along with many others.”

– ANONYMOUS

“The hep C program has given me so much more hope in my journey in recovery. I have learned so much about the disease and myself with the program. Finally, I’m very grateful to have the opportunity to cure my hep C. I always feel welcome when I come to the clinic.”

– GEOFF
2.0 Definitions

**Cirrhosis:** advanced stage of liver fibrosis that is usually characterised by irreversible scar tissue build up. Major complications, such as heavy bleeding, swelling and breathing problems, associated with cirrhosis of the liver significantly reduce individuals’ life expectancy.

**Fibroscan:** a non-invasive test, also known as transient elastography, which is used to score an individual’s stage of liver fibrosis.

**Hepatitis C (HCV):** a blood-borne viral infection that attacks the liver and can lead to serious, life-threatening outcomes for many people living with long-term infection. There is no vaccine currently available for HCV but a cure can be achieved through appropriate treatment.

**Hepatitis C Tests**

**HCV antibody test:** detects whether there are any anti-HCV antibodies present in the blood sample. If this test is “reactive”, bloodwork must be completed to verify whether there is an active infection. This test will remain “reactive” for life, even after successful treatment and sustained virologic response.

**HCV RNA test:** used to confirm the presence or absence of active HCV infection by identifying the amount (if any) of HCV virus in the blood sample, also referred to as the viral load.

**HCV genotype test:** identifies which genotype and subtype is present in the blood sample. There are six genotypes with numerous subtypes. Genotype is important for selecting the appropriate antiviral therapy, including regimen, dosing and duration of therapy.

**Liver Fibrosis:** the excessive accumulation of scar tissue in the liver that results from chronic inflammation. Liver fibrosis may progress to cirrhosis, portal hypertension and impaired liver function. Liver fibrosis is measured in five stages, with stage F0 indicating a normal liver, and stage F4 indicating liver cirrhosis.

**Sustained Virologic Response (SVR):** an undetectable HCV RNA at 12 (SVR$_{12}$) and 24 (SVR$_{24}$) weeks after completion of treatment. With the improvement in HCV therapies, SVR$_{12}$ is considered the gold-standard for measuring long term HCV cure.

**Viral Relapse:** occurs when the HCV viral load begins to rise after the virus has become undetectable. This can occur after treatment is completed.
3.0 Introduction

3.1 Hepatitis C (HCV)

Hepatitis C is a blood-borne viral infection that attacks the liver and can lead to serious, life-threatening outcomes for many people living with long-term HCV.

Although negative health effects can take many years to develop, HCV can ultimately lead to severe liver damage and even failure, as well as increase a person’s risk for developing liver cancer.

HCV is usually spread through exposure to blood from a person infected with the HCV virus. Transmission most commonly occurs from sharing needles in the setting of drug use, or sometimes through equipment used for tattooing. There are also individuals who contracted the virus from blood transfusions or organ transplants before 1990 when screening for HCV first became standard.

Diagnosis of HCV is performed using blood tests; the first test confirms the presence of antibodies to HCV and the second test identifies the presence of the HCV virus.

3.2 Hepatitis C Treatment

Treatment for HCV previously required medications such as Interferon which needed to be administered as an injection once a week.

These treatments frequently took 48 weeks to complete and often required a hospital-based team of experts due to the significant potential side effects. Cure rates with these older treatments were low – often not more than 50 percent of those treated. Curing HCV is the goal of treatment, as it allows the liver to heal, and for most individuals, it prevents further progression of liver disease.

The development of new, more tolerable oral therapies allow most patients to have community-based treatment that can be completed in as little as 12 weeks. Under ideal circumstances, these new therapies can have cure rates of over 95 percent.

As treatment options for HCV continue to improve and become accessible to all individuals living with HCV, we will continue to provide low barrier access to treatment with a goal of curing all of our clients living with HCV.

“Never be embarrassed of having this disease because there is a cure, you just have to ask about it.”

– ROX
4.0 Program Overview

4.1 Description

VCH primary care clinics provide holistic care to the single largest group of clients living with HCV in Vancouver, and one of the largest groups in BC.

The program provides compassionate, equitable and integrated health care to those with the greatest need and the least access to service. Our clients are living with complex medical and psychosocial needs, are underserved by the traditional medical system, and require a higher intensity of services to achieve and maintain functional stability. Our integrated, low barrier, and compassionate team approach is key to creating a welcoming environment, engaging individuals in care and supporting them to have successful treatment outcomes.

Our teams address people’s HCV-related needs throughout their HCV journey, including pre-treatment, on-treatment, post-treatment and end-of-life care. Our teams are made up of physicians, nurses, social workers, counsellors, pharmacists, research assistants and administrative staff. We deliver high quality HCV care with a focus on low barrier access to service, holistic care delivery that strives to address each individual's unique needs, and a community approach that includes weekly support groups. A cornerstone of this community-based treatment approach is providing our clients with concurrent on-site mental health and substance use services.

Initial engagement with the HCV team includes diagnosing and identifying the stage of HCV infection. We also often also re-engage individuals into care who may have been previously diagnosed but have not received support and/or treatment. The teams provide HCV-related health education, and perform tests such as liver fibrosis staging and blood work. We are also able to provide the full spectrum of primary care services to individuals who are co-infected with HIV or have other conditions in addition to their HCV infection, with the support of our larger interdisciplinary team.

During treatment, all aspects of the client’s health need to be supported. Clinicians can check-in with clients at least once a week if extra support is needed. In most situations, a person’s HCV medications are linked at their pharmacy with any other daily medications that they are taking (including opioid replacement therapies). The HCV teams work with local pharmacies, hospitals, community partners and the criminal justice system in order to reduce the risk of a client missing any doses of their HCV therapy. Regular collaboration with other community organizations and agencies supports clients to be successful in their HCV treatment and other health outcomes.

"Every Thursday for 3 hours I listened, learned and shared while I received treatment. The support, knowledge, medical attention and friendships that enabled me to accept, understand and endure treatment was constant and growing. 22 years after being diagnosed with hep C, I am cured. It.

– NANCY
4.2 Sites and Team Members

**Pender Community Health Centre**

*Photo (left to right):* Steven Persaud (MD), Jennifer Guesnelle (RN), Lesley Gallagher (RN), Doug Elliot (Counsellor)

*Not pictured:* Holly Kleban (Counsellor), Susan Nouch (MD)

**Downtown Community Health Centre**

*Photo (left to right):* Aylar Macarei (pharmacist), Cherryl Pacheco (pharmacist), Michael Thompson (LPN), Manda Harmon (Clinical Coordinator), Adrienne Jinkerson (RN), Deborah Kason (MD), Julie Balderston (RN), Kelley Goodall (LPN), Dan Pare (DCHC Medical Coordinator), Monika Stein (DCHC Manager), Dr. Mark Hull (HCV Medical Coordinator)

*Not pictured:* Barb McKillip (NP), Irma Edwin (Clinical Coordinator), Kanon Lo (Pharmacist), Laura Knebel (MD), Phyllis Mallet (RN), Rachel Watters (MAT Pharmacist), Suzanne Hinds (Counsellor)

**Ravensong Community Health Centre**

*Photo (left to right):* Peggy Mersereau (Counsellor), Mark Viljoen (MD), Lesley Gallagher (RN), Leslie Logan (RN)

*Not pictured:* Deanna MacKenzie (RPN)

**VCH Leads**

Andrew Day, Operations Director, Vancouver Central and Program Lead for Primary Care
Danielle Cousineau, Clinical Practice Leader, Primary Care
Leslie Gallagher, RN, HCV Nursing Lead
Dr. Mark Hull, Medical Coordinator for HCV Program
Dr. Michael Norbury, Medical Director Primary Care

**Key Program Development Leads**

Dr. David Hall, Department Head of Family & Community Practice
Misty Bath, Clinical Practice Leader, Primary Care
5.0 Outcomes

Since our collaborative Hepatitis C program was established in 2013, the number of sites have expanded and the teams have been striving for excellence in care delivery and client outcomes.

The HCV cascade of care is a meaningful way to evaluate our local program outcomes, as well as population level outcomes. It highlights key milestones along the HCV diagnosis and treatment journey and includes the following stages:

- Number of clients engaged with our VCH primary care teams
- Number of HCV tests completed for VCH clients
- Number of HCV antibody positive test results
- Number of HCV RNA and genotype tests completed (to identify active infection)
- Number of Fibroscans completed (to complete staging of severity of liver disease)
- Number of people initiated on treatment
- Number of people who completed treatment
- Number of people who achieved Sustained Virologic Response (SVR) i.e. cure

The following data includes information that has been collated from the Profile electronic medical record system used by the Vancouver Community primary care and hepatitis C teams, as well as additional data collected and reported by these teams. Work is underway to improve the reliability of the data that can be extracted from the electronic medical records, and until these systems are in place, each site separately collects and reports data on program outcomes to ensure an accurate picture of those receiving treatment.
5.1 Testing and HCV positive rates for Vancouver Community Primary Care Clinics

The goal of increased HCV testing is to identify individuals who are not aware of their HCV status.

Testing is recommended for all “Baby Boomers” born between 1945 and 1970, and for individuals who have a history of drug use or incarceration, or are living with other viral infections such as HIV or hepatitis B. Where possible, Vancouver Community primary care teams integrate HCV testing into other routine blood testing.

Outcomes:
Of clients who are engaged in care with one of our Primary Care teams, 47 percent (5703 clients) have a documented test for HCV in the period between 2013-2016, with 42 percent of those with a documented test receiving a HCV diagnosis (2,375 clients). Here, we define clients as engaged in care if they have had four or more visits in the past 14 months.

<table>
<thead>
<tr>
<th>HCV Testing Rates (2013-2016)</th>
<th>Number of clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clients Engaged in Care</td>
<td>12,164</td>
</tr>
<tr>
<td>Tested For HCV</td>
<td>5,703</td>
</tr>
<tr>
<td>HEP C Positive Results</td>
<td>2,375</td>
</tr>
</tbody>
</table>

5.2 Assessment by Hepatitis C Team

Key elements of the Hepatitis C team’s assessment are: client history, comprehensive blood work, Fibroscan, and client readiness for treatment.

Information on HCV disease progression and treatment options are provided to clients in groups and one-on-one settings.

Under BC’s current Pharmacare coverage, there are specific requirements that must be met in order to qualify for HCV treatment. This includes lab confirmation of current HCV virus, recent genotype that matches the indicated treatment, with liver fibrosis staged at F2 or higher.

Outcomes:
In 2016, the Hepatitis C teams assessed treatment eligibility and readiness for over 500 individuals. The majority (58 percent) of those assessed were clients already engaged with one of our primary care teams. The remaining clients were referred from external agencies or programs.
5.3 Fibroscan Use

The Fibroscan is a non-invasive scan used to identify liver fibrosis and provide disease staging.

Currently, the Fibroscan scores are one of the main methods used to determine treatment eligibility and this is an important step in the HCV cascade of care. Therefore, it has been vital to have a Fibroscan device and trained operators at our sites to provide fully integrated, wrap-around HCV care to our primary care clients.

The VCH Hepatitis C program received two significant donations from the VGH Foundation to support improved access to HCV treatment by supporting the acquisition of the Fibroscan device in June 2015 and an extra-large probe to improve the accuracy of our fibrosis measurements.

From June 2015 to December 2016, we completed 559 Fibroscans at the VCH HCV Team sites, including Pender, Raven Song and Downtown Community Health Centres.

"Treatment will help extend my life, I'm looking forward to increased health and energy."

– ANONYMOUS

### Fibroscans Completed

<table>
<thead>
<tr>
<th>Period</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>June - November 2015</td>
<td>150</td>
</tr>
<tr>
<td>December 2015 - March 2016</td>
<td>156</td>
</tr>
<tr>
<td>April - June 2016</td>
<td>101</td>
</tr>
<tr>
<td>July - September 2016</td>
<td>72</td>
</tr>
<tr>
<td>October - December 2016</td>
<td>80</td>
</tr>
<tr>
<td>Total Fibroscans June 2015 - December 2016</td>
<td>559</td>
</tr>
</tbody>
</table>
5.4 Treatment and Cure Rates

During 2015-2016, the three VCH HCV teams supported 258 individuals to start treatment.

Of those, 168 initiated treatment and completed follow-up within our reporting period of April 2015 to December 2016. The remaining 90 clients were not included in this report, as they were either still on therapy or within the 12-week post-treatment follow-up period at the end of our reporting date.

There were 165 individuals who completed HCV therapy with sufficient follow-up post treatment; of those, 151 individuals achieved a documented sustained virologic response or cure (91.5 percent), and only 17 individuals had unsuccessful treatment. Unsuccessful treatment is defined as incomplete treatment, lost to follow up, viral relapse or deceased. Some barriers clients face in achieving sustained virologic response or a cure include homelessness and a lack of supportive housing. Many of the clients lost to follow-up may have achieved a cure however we are unable to confirm these outcomes.

The hep C program has given me a more positive outlook on life in terms of my health. I completed 16 weeks of treatment and the hep C virus has cleared from my body.

– ANONYMOUS

Cumulative Treatment Outcomes April 2015 to December 2016*

<table>
<thead>
<tr>
<th>Number of clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiated on HCV TX</td>
</tr>
<tr>
<td>Completed HCV TX</td>
</tr>
<tr>
<td>Achieve SVR</td>
</tr>
<tr>
<td>Unsuccessful treatment**</td>
</tr>
</tbody>
</table>

* Data includes clients who initiated treatment within this time period with sufficient time for follow up and SVR12 prior to December 2016.

** Unsuccessful treatment includes incomplete treatment, lost to follow up, viral relapse or deceased.
6.0 Moving Forward

As BC Pharmacare criteria for HCV therapy expands to allow access to treatment for more and more individuals, this framework and report will be used as the basis for monitoring improvements in the HCV cascade of care for the community. Our goal is to improve diagnosis rates, ensure all HCV positive individuals are assessed using a Fibroscan, and are offered HCV therapy. Our vision is a community where all individuals living with HCV are able to achieve a successful cure of their infection in the context of holistic care.

7.0 References

http://dx.doi.org/10.1155/2016/4385643