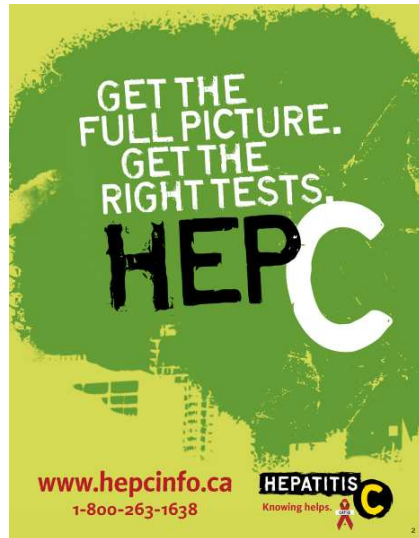


# Hepatitis C Testing

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Jeff Reinhart  
Manager  
Hepatitis C Program  
CATIE

## What is...

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- ...hepatitis?
  - liver damage like inflammation, scarring, fibrosis and/or cirrhosis
- ...hepatitis C?
  - liver disease caused by the hepatitis C virus
- ...the hepatitis C virus?
  - virus that infects liver cells

# The Hepatitis C Virus



www.thehealthnews.org

- Identified in 1989
- Not A and not B
- Causes liver damage

- No vaccine
- Spread through blood-to-blood contact, especially shared drug-use equipment



www.giantmicrobes.com

## Diagnosis of hepatitis C (HCV)

- Hepatitis C testing and diagnosis is complex
- It is important for every person to receive at least two tests specific to hepatitis C to determine current active infection

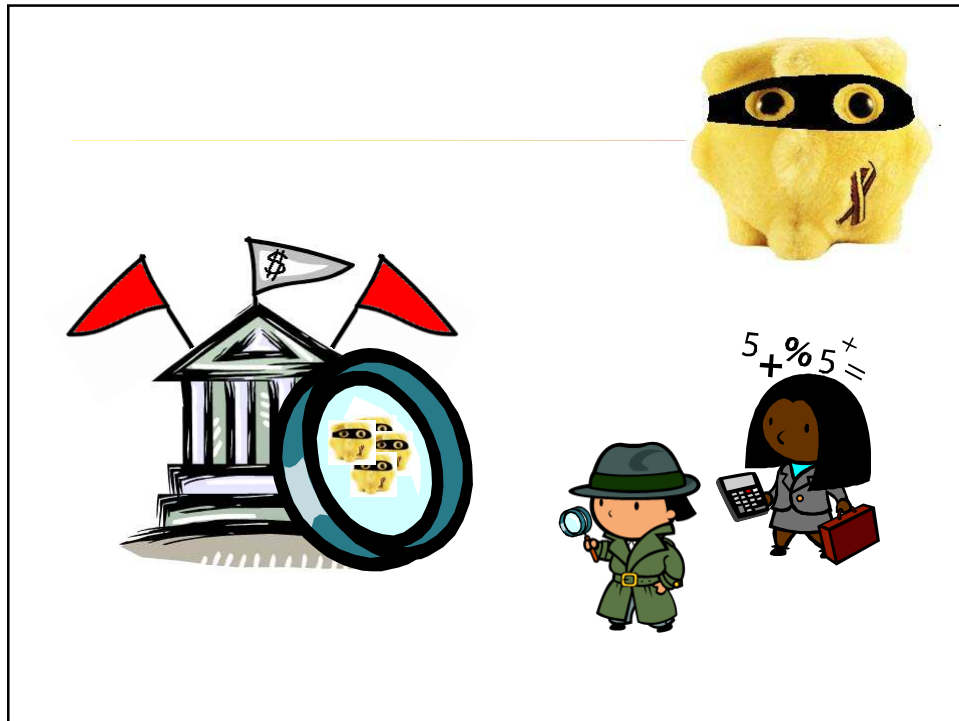


**Hep C Antibody test**



**Hep C PCR-RNA test**





## Hep C Testing - Diagnosis

- Antibody (EIA)
  - Looks for HCV antibodies in blood
  - Indicates Exposure (blood-to-blood contact)
  - Have antibodies for life, but they don't protect against getting Hep C again
  - Window period 10 weeks, but can be up to 6 months
  - Sometimes called: EIA, ELISA, RIBA



## Hep C Testing - Diagnosis

- RNA (PCR)
  - Looks for the HCV virus
  - Completed after a positive antibody test
  - shows active infection



- Qualitative = detectable? Yes/No =

- Quantitative = N for Number = Viral Load =
  - measures viral load



## HCV Antibody Testing



- This test is commonly referred to as the anti-HCV test

Result	Interpretation
Reactive	<ul style="list-style-type: none"><li>• Positive</li></ul>
Non-Reactive	<ul style="list-style-type: none"><li>• Negative</li><li>• immune compromised?</li></ul>
Inconclusive	<ul style="list-style-type: none"><li>• window period?</li><li>• immune compromised?</li><li>• false positive?</li></ul>

## HCV RNA Testing

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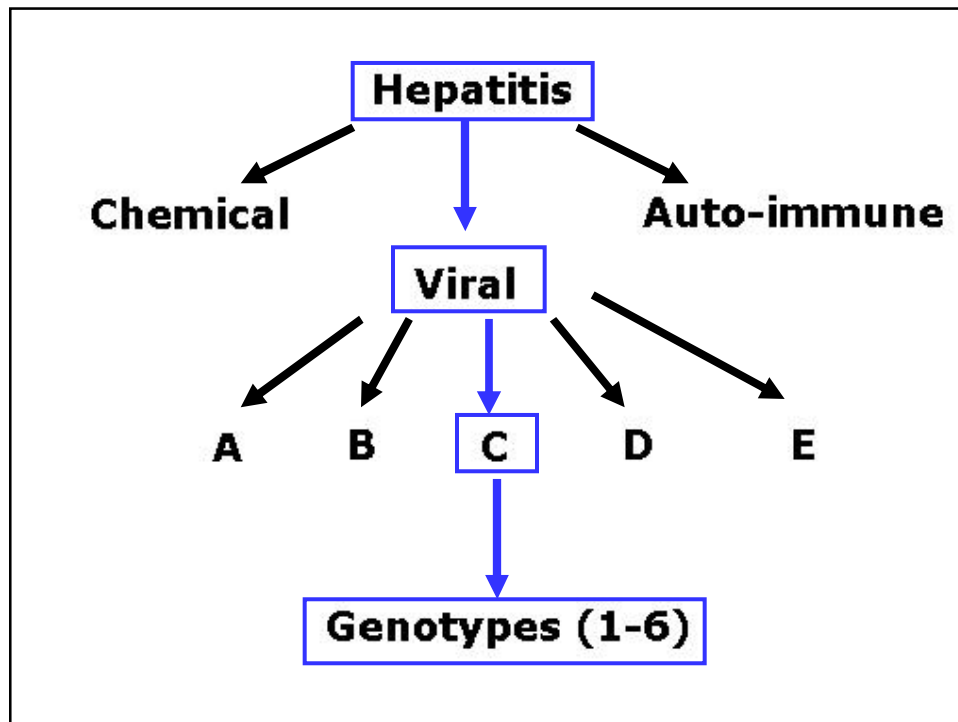


- The hepatitis C virus is a single-stranded RNA virus – the RNA test detects the actual genetic material (RNA) in the hepatitis C virus, thus making it a very sensitive test
- The presence of RNA can be detected within one to three weeks of exposure
- HCV-RNA samples require specific preparation and handling

## HCV RNA Testing

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- Two blood samples are required to confirm active infection – antibody and RNA
- The HCV RNA test must be completed prior to initiating treatment to
  - confirm infection
  - provide baseline viral load prior to treatment
  - provide genotype to guide treatment
- RNA testing is also used to determine treatment milestones (RVR, EVR, SVR)



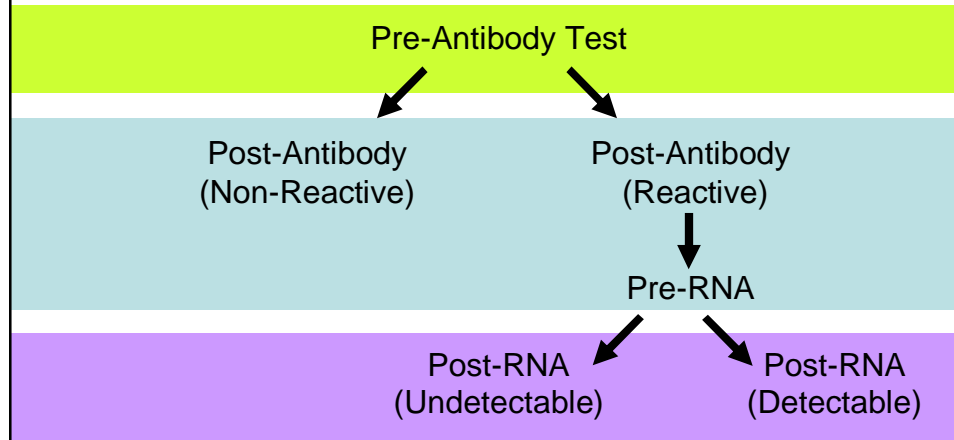
## Genotype Testing

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- The hepatitis C virus can be further differentiated by the type of hepatitis C a person is infected with – known as a genotype
- There are six known genotypes and hundreds of subtypes
- Provides precise differentiation of the HCV genotypes 1 through 6 with 99.9% accuracy
- Useful in evaluating the likelihood of response to treatment
- Available for pre-treatment HCV RNA tests (baselines). Genotypes are not required unless treatment is being initiated

## Testing & Counselling

- Depending on test results, counselling during testing can be a three-visit process



## Counselling before antibody testing

- Review any prior history of hepatitis C testing, counselling and knowledge level of the disease.
- Review what HCV is, including [modes of transmission](#) (blood-to-blood contact).
- Review the relationship HCV has to other factors such as addictions, HIV and sexually transmitted infections. Recommending testing for HIV or other infections may be appropriate.
- Explain that testing is voluntary and confidential (anonymous hepatitis C testing is not available).
- Ask the person how they think they would respond to having hepatitis C. This can identify misinformation they might have and better prepare them for test results.
- Provide details on the [type of testing](#) to be done and what the results of both the antibody test and RNA test will mean.

## Counselling before antibody testing

- Explain that results should be expected within two to four weeks and delays do not necessarily indicate a positive test.
- Review [risk-reduction behaviours](#) associated with hepatitis C and other blood-borne diseases (including HIV and hepatitis B).
- Reassure and refer the person for emotional support while he or she waits for the results.
- Discuss vaccination for hepatitis A and B, if appropriate, and that there is no vaccine for hepatitis C.
- Explain to the individual that there are treatment options available for hepatitis C.

## Counselling after a negative antibody test

- Negative antibody test results mean the person was not exposed to hepatitis C and is not infected. However, discuss the window period (2 weeks to 6 months). If there were risk activities within the window period, recommend repeat antibody testing 6 months after risk activities.
- If the individual is immune compromised, recommend HCV RNA testing to rule out the possibility of a false negative test result.
- Emphasize that a negative test result does not mean the person is immune to future infection.
- Provide information on how to [reduce risk](#).
- Encourage people to continue to access healthcare and other supports as needed.

## Counselling after a positive antibody test

- A positive antibody test result means there is a possibility that the person has an active infection. Explain that he or she was exposed in the past and that the RNA test is required to assess if he or she has an active HCV infection.
- Explore options for support that the person can access, both personally and through organizations or agencies, while he or she waits for the results and also if the RNA test comes back positive. Include a reminder about HCV treatment options.
- Cover information on how he or she will test positive for antibodies on future tests but that antibodies do not provide immunity to future HCV infection.
- Discuss [harm reduction strategies](#).

## After a negative RNA test

- If the RNA test results show no detectable virus, explain to the person that he or she has cleared the virus and is not infected.
- Recommend repeat testing to be done in six months to be sure there is no active infection.
- Review how the person can [reduce the risk of HCV infection](#), including the possibility of getting re-infected (HCV antibodies do not provide immunity to the virus).
- Encourage the person to continue to access health services.

## After a positive RNA test

- Reassure and support the person in realizing that hepatitis C is a serious but manageable disease.
- Review [harm reduction principles](#) and prevention so the person knows how to minimize the chances of transmitting HCV to others, how to prevent becoming infected with a different genotype of HCV and how to avoid other infections such as HIV or hepatitis B.
- Tell the person that [more testing](#) will be done to monitor the infection.
- Review [treatment options](#) and discuss [treatment readiness](#).
- Talk about maintaining liver health and other [healthy living options](#), including disclosure.
- Discuss and encourage a plan for medical follow-up and a plan for managing potential ongoing emotional reactions, including options for support. Be prepared with referrals, including reading materials, support services and treating physicians in the person's community, if available.

## Keep in mind...

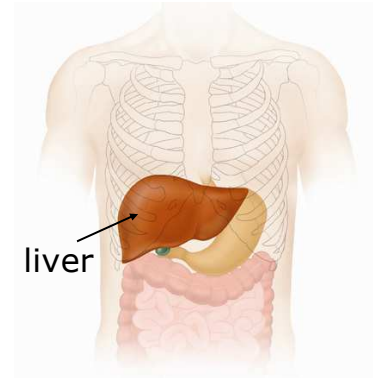
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- Is the client overwhelmed by the information? Does he or she want more information or less?
- What extra support could help the client follow up with the next phase of testing and counselling? How can he or she connect with organizations that provide this support?
- What extra support could help the client follow up on recommendations discussed during a counselling session? How can he or she connect with organizations that provide this support?

# Liver

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- Largest internal organ
- Regenerates
- “Filter” of the body
  - Filters & Cleanses
  - Manufactures
  - Regulates
  - And more!



## Monitoring Liver Damage

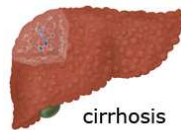
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- Liver enzyme tests
  - ALT, AST and sometimes ALP, GGT, LDH
  - High enzyme levels mean some sort of liver damage is happening
- Liver function tests
  - prothrombin, bilirubin, albumin, INR
  - Can show if the liver is working properly

## Monitoring Liver Damage

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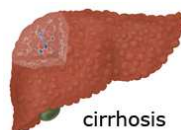
- Ultrasound
  - Uses sound waves to take a picture of the liver
  - Shows the difference between a healthy liver and one with a lot of damage
  - Also used to screen for liver cancer



## Monitoring Liver Damage

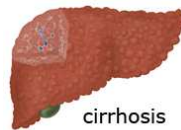
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- Fibroscan
  - A modified ultrasound
  - Uses a computer to measure sound waves to see how stiff the liver is
  - Stiffness is a sign of liver damage and scarring



## Monitoring Liver Damage

- Biopsy
  - A small piece of the liver is removed with a needle and examined under a microscope
  - Measures level of cirrhosis and/or fibrosis
    - METAVIR scores between 0-4, with 2 being fibrosis and 4 being cirrhosis



## Monitoring Tests (Treatment)


- Treatment goal is to clear the virus
  - called SVR (*sustained virological response*)
  - Treatment is 50-80% effective
- Two medications:
  - i) peg-interferon
  - ii) ribavirin



## Monitoring Tests (Treatment)


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- Viral load test (RNA test) can be used at different times during treatment to see if it is working

- $5_{+} \% 5_{\leq}$  
- Rapid – RVR - 4 weeks
  - Early – EVR - 12 weeks
  - End of Treatment - 24 weeks or 48 weeks
  - Sustained – SVR - 6 months after treatment ends

## Monitoring Tests (Treatment)

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- In Alberta, 
  - Qualitative at end of treatment
  - Qualitative at 6 months after treatment to assess for SVR
  - Qualitative at 12 weeks for genotypes 1/4 to assess for EVR

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- [jreinhardt@catie.ca](mailto:jreinhardt@catie.ca)

- [www.hepCinfo.ca](http://www.hepCinfo.ca)

- 1-800-263-1638

- 555 Richmond St W  
Suite 505/Box 1104  
Toronto, ON M5V 3B1