Hepatitis C & HIV Co-infection

Goal:
• To increase participants’ knowledge of Hepatitis C and how it impacts people co-infected with HIV.

Objectives:
• To provide participants with:
  • An overview of the virology of Hepatitis C, including an understanding of the impact on the liver.
  • Accurate information about Hepatitis C transmission and prevention.
  • An understanding of their role in encouraging accurate and complete testing for Hepatitis C.
  • An understanding of the challenges and complexities of treatment.
  • An understanding of the impact of Hepatitis C locally, regionally, provincially, nationally and internationally.

Outline
• Hepatitis (A,B,C)
• The Liver
• Transmission & Prevention
• Testing
• Treatment
• Epidemiology
• Co-infection with HIV

The Liver
• The liver is needed for a lot of reasons, it filters everything we put in our bodies:
  − Breaks down food and turns it into energy
  − Stores essential vitamins and minerals, such as iron and copper
  − Makes and regulates hormones including sex hormones
  − Helps make proteins that repair damaged tissues
  − Processes and neutralizes substances
  − Helps the body get rid of waste products
• If the liver is damaged, it can’t do these important jobs properly, so people with liver damage may start to feel ill.

Hepatitis
• hepa = liver
• itis = inflammation
• Hepatitis A
• Hepatitis B
• Hepatitis C
  − Increasing health concerns
• All affect the liver to varying degrees
• Transmitted differently
• Vaccines for hepatitis A and B

Hepatitis A
• Vaccine
  − Often 2 step
• Fecal → Oral transmission
• Diagnosed with a blood test
• Acute not chronic
• No treatment
  − People recover within a few weeks
Hepatitis A

You could get hepatitis A from:
- Eating food made by an infected person who didn’t wash his or her hands after using the bathroom
- Drinking untreated water or eating food washed in untreated water
- Placing a finger or object in your mouth that came into contact with an infected person’s stool
- Having close personal contact with an infected person, such as through sex (esp., rimming) or caring for someone who is ill

You cannot get hepatitis A from:
- Someone sneezing or coughing on you
- Sitting next to a person who has hepatitis A
- Hugging an infected person

Hepatitis B

Hepatitis B is transmitted through **blood and infected bodily fluids**. This can occur through:
- Direct blood-to-blood contact
- Unprotected sex
- Unsterile needles
- From an infected woman to her newborn during delivery.

Other possible routes of infection include sharing sharp instruments such as razors, toothbrushes or earrings. Body piercing, tattooing and acupuncture are also possible routes of infection unless sterile needles and equipment are used.

Hepatitis B is ***NOT transmitted casually***. It cannot be spread through sneezing, coughing, hugging or eating food prepared by someone who is infected with hepatitis B.

Hepatitis C (Hep C)

- **11 major genotypes types**
  - Possible to be infected by different genotypes
  - Type 1 is most common in North America
  - The particular genotype a person has will affect treatment decisions

- **Hep C is classified into eleven major genotypes (designated 1-11), many subtypes (designated a, b, c, etc.), and about 100 different strains (numbered 1,2,3, etc.) based on the genomic sequence heterogeneity.**

  - Genotypes 1-3 have a worldwide distribution.
  - Type 1a and 1b are the most common, accounting for about 60% of global infections. They predominate in Northern Europe and North America, and in Southern and Eastern Europe and Japan, respectively.
  - Type 2 is less frequently represented than type 1.
  - Type 3 is endemic in south-east Asia and is variably distributed in different countries.
  - Genotype 4 is principally found in the Middle East, Egypt, and central Africa.
  - Genotype 5 is almost exclusively found in South Africa.
  - Genotypes 6-11 are distributed in Asia.
How is Hep C transmitted?

- Primarily blood to blood contact... even if you can’t see the blood!

High Risk

- **Sharing drug-use equipment**: The equipment used for preparing and injecting drugs, including steroids, can have microscopic amounts of blood on it and transmit Hep C. Even a single event of sharing equipment (including syringes, cookers, water, filters, tourniquets, and alcohol swabs) is cause for testing to be considered.

- **Sharing other drug-use equipment**, like crack pipes, or bumpers, bills or straws for snorting cocaine and other powdered drugs, can be risky because small amounts of blood from cracked lips or tiny nosebleeds can also be found on these items.

- **Sharing tattoo or body-piercing equipment**: The needles, equipment and ink can be contaminated with blood and transmit Hep C, usually in places and situations where proper sterilization techniques or single-use equipment are not available or cannot be used.

Some Risk

- **Blood transfusions prior to 1992**: In 1992, routine blood screening began and the risk for Hep C from the blood system is now very rare, but transfusions before 1992 are considered high risk.

- **Unsterilized medical equipment**: Shared medical or surgical equipment can transmit Hep C if it is not sterilized between patients.

- **Blood or cutting rituals**: Rituals that involve cutting with shared tools or the exchange of infected blood can transmit Hep C.

Sexual Hep C Transmission

- **Some Risk**: Shared razors, toothbrushes, nail clippers and other household items that might have infected blood on them can transmit Hep C.

- **Unprotected sexual intercourse**: Hep C can be transmitted sexually, especially when there is a chance that infected blood could be present (like during menstruation or certain sex practices, such as sex that involves fisting) or when other sexually transmitted infections are present.

- **Vertical transmission during childbirth**

- **Needlestick injuries**: Possibility of exposure to Hep C-infected blood.

No Risk

- **Casual contact with a person living with Hep C**, including sharing toilets, drinking glasses and eating utensils.

- **Hugging, kissing or touching a person living with Hep C**.

- **Using new or sterilized medical equipment during medical procedures**.
Other Risk Factors…

- Increasingly, in Canada, people infected with hepatitis C are disproportionately affected by poverty, substance abuse, racism and limited access to healthcare.
- People living on the streets often do not have access to sanitary environments.
- Prison populations do not have access to needle exchange programs or sterile tattooing equipment and they may share personal hygiene items.
- Medical practices in some countries 20 or 30 years ago exposed numerous people to Hep C, some of whom have immigrated to Canada.
- Aboriginal people face the challenges of racism and its impacts, including isolation, poverty and the erosion of culture, which can lead some people to engage in risk activities.

Hep C Outside the Body

- The virus itself is quite resilient
- Some evidence that Hep C may survive outside of the body for four days or more
- Anecdotal evidence suggests up to two weeks

Preventing Transmission

- Avoid sharing…
  - Needles, syringes, cookers, tourniquets, water... any injecting equipment
  - Crack pipes
  - Snorting equipment
  - Razors, nail clippers, toothbrushes
  - Piercing/tattooing/branding equipment
- Have protected sex…
  - Especially if blood might be involved
    • Longer duration and rougher sex acts

Transmission Key Messages

- Once infected with Hep C the body produces antibodies
  - Window Period is usually 6 - 9 weeks (up to 6 months)
  - Testing is recommend 3-6 months post exposure
- The antibody test is a screening test:
  - If NEGATIVE, either...
    • The person is not infected, OR
    • They may be infected but their body hasn’t produced antibodies yet (window period)
  - If POSITIVE, then...
    • RNA testing needed to see if the person still has Hep C in their body (some people clear the virus)

Hep C Testing

- Informed consent
- The earlier people are tested and diagnosed the better
- Places to go for testing include:
  - Public Health Units
  - Community Health Centres
  - Doctors’ offices
  - Walk-in clinics
- Although the testing for Hep C is not anonymous, the results are confidential
- Hepatitis C is a reportable disease across Canada
  - Case definitions for reporting differ from province to province
  - Currently, testing positive for Hep C antibodies is the case definition for reporting of Hep C in Ontario
  - Contact tracing (some Health Units)

Hep C Testing

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Hep C Testing

- Diagnostic Tests:
  - Hep C Antibody test: If positive ➔
  - RNA Testing
    - Generally used when a person has tested positive for Hep C antibodies
    - Some people are able to clear the Hep C from their body without treatment and thus will have no detectable Hep C RNA in their blood
    - To be certain the virus has cleared, repeat testing is required
    - Determines the genotype (important for treatment)
- Important to encourage people to return for their test results at all stages of testing

Why get tested?

- Empowers people by giving them information they can use to stay healthy
- Individuals who find out they are living with Hep C can make decisions about how to prevent transmission, how to stay healthy, and whether or not to access treatment
- People whose test results show they are not infected can identify risk factors and learn to keep themselves safe from infection

Testing Key Messages

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- 6 months
- 20-30 years
- If 100 people are infected...
  - ~20 people
  - ~80 people
  - 40-60 people
  - Cirrhosis: 20 people
  - Cancer: 1-4 people

Testing Key Messages
Hep C Symptoms
• Over half of people who are infected are asymptomatic (show no symptoms) in the beginning and may carry the virus for many years before other symptoms develop
• Only about one-third of people show symptoms during the acute infection stage
• If the disease progresses to chronic infection, it can take years before symptoms develop
• Relying on symptoms is not a reliable way to diagnose

Acute (Early) Infection Symptoms
• Fatigue
• Tenderness or an aching feeling on the right side of the abdomen
• Decreased appetite perhaps with weight loss
• Flu-like symptoms
• Nausea
• Tendency to bruise or bleed easily
• Jaundice (yellowing of the skin and whites of the eyes)
• Rash
• Dark-coloured urine and light or clay-coloured stools
• These symptoms often go away after a short time.

Hep C Symptoms of Advanced Liver Disease
• Jaundice
• Ascites (swelling in the abdomen)
• Blood in stool or vomit
• Sleep disturbances, depression, weight loss, dry or itchy skin, and “brain fog” are also found in people with chronic Hep C but the cause of these symptoms remains uncertain.

Hep C Treatment
• There is treatment for Hep C. Treatment today is the best it’s ever been and it’s helping more and more people get rid of the virus.
• You might hear lots of bad things about Hep C treatment, but many people choose to take treatment and are able to get rid of the virus.
• A healthcare worker can help you decide if treatment is right for you and help you get ready to start.
• Treatment takes six months to a year, but you’ll know in the first three months if it will work for you.

Hep C Treatment Depends on Genotype
• Treatment time depends on what genotype a person has…
• In mono-infection:
  – Genotypes 2 and 3 need six months of treatment
  – Genotypes 1 needs one year of treatment
• It either works, or it doesn’t. When it works it’s called SVR (Sustained Virological Response)
• SVR is: undetectable Hep C viral load, 6 months after treatment ends
Rates of Success of Treatment

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Length of Treatment

- Treatment duration is determined by the genotype of the hepatitis C virus.
- Treatment for genotype 1 lasts 48 weeks (one year). Currently, genotypes 4, 5 and 6 are treated the same way as genotype 1. About 45% of people with genotype 1 will clear the virus.
- People with genotypes 2 and 3 respond better to the medications and are treated for 24 weeks (six months). About 80% of people with genotype 2 or 3 will eradicate the virus.
- Treatment success is predictable as early as four to 12 weeks into treatment. A doctor will usually do a viral RNA test at four weeks and at 12 weeks.

Length of Treatment

- If the virus is undetectable at four weeks it is called rapid virological response (RVR).
- If at least 99% of the virus is cleared from the body at 12 weeks, it is called early virological response (EVR).
- Obtaining RVR or EVR is highly predictive of successful treatment. If a person does not get EVR at 12 weeks, it is likely their treatment will be stopped, as this person is not responding to treatment and will not achieve a sustained virological response. If a person does achieve EVR, the full course of treatment (as per genotype) will be completed to ensure that the virus is eradicated from the body.

Hep C Treatment Medications

- Hep C treatment is:
  - PEG-interferon, injected subcutaneously (under the skin) once a week
  - Pegasys (interferon-alfa-2a) — made by Hoffman-La Roche
  - PEG-Intron (interferon-alfa-2b) — made by Schering-Plough
  - Combination therapy — PEG-interferon and ribavirin — may be used to try and wipe out Hep C infection. If this is not possible, it may also be given in an attempt to reduce the liver damage caused by Hep C infection. Ribavirin is a pill taken twice daily, with food.
  - Hep C treatment may be problematic for former users because the medication must be injected.

Emerging HCV Treatment

- Mono-infected patients that received a 48-week Boceprevir regimen achieved a 75 per cent SVR rate, nearly twice the efficacy rate provided by current standard therapies.
- Telaprevir is the first of these new HCV drugs to study this combination therapy for the co-infected population.
  - Showing a significant increase in SVR rates from approximately 25% to possibly 70%.
  - Shorter potential durations of treatment using Response Guided Therapy and the knowledge of increased SVR rate will be of great benefit to both the patient and the caregiver.
  - In the longer term, from a systems perspective, the benefit of increased likelihood of achieving SVR would help to reduce costs in the health care system by reducing the need to treat end stage liver disease or provide transplantation.
### Emerging HCV Treatment

- One of the most common adverse effects of the drug Boceprevir was anemia.
  - More than 40% of patients needed erythropoietin for up to 150 days.
  - This is significant as erythropoietin is expensive and not readily accessible on all prescription drug plans.
  - The other alternative is to reduce the dose, possibly reducing the rate of SVR.
- Other side effects include a foul taste in the mouth and changes in taste, gastrointestinal tract adverse effects, and skin rashes.
- There is HCV protease inhibitor interactions with some HIV medications that may require some people to change HIV regimens.

### Emerging HCV Treatment Resources

- **2011 Hepatitis C Pipeline Report – Treatment Action Group**
- **Telaprevir and Boceprevir drug interactions with HIV drugs**
- **www.natap.org**
- **www.hcvadvocate.org**
- **www.hepatitisandhiv.com**

### Medication Side Effects

- Hep C treatment can be very difficult
  - Depression
  - Mood problems
  - Brain fog
  - Fatigue
  - Flu-like symptoms (fever, chills, aches)
  - Skin problems
  - Anemia (low levels of red blood cells)
  - Neutropenia (low levels of a type of white blood cell)
  - Low platelets (which help blood to clot).
- Not everyone will get really bad side effects, but just in case – it’s best to be prepared
  - Have a support network ready
  - Make a plan for how to manage
- People should wait six months after finishing treatment before trying to have a baby

### Dealing with side effects

- Fatigue
  - Rest as much as possible.
  - Plan injections for days when you can rest.
  - Try some mild exercise to improve sleep.

- Muscle aches, may feel like the flu
  - Ask your doctor or nurse if pain relievers are right for you.

- Headaches
  - Drink plenty of water.
  - Pain relievers or other headache medications may help; ask your doctor or nurse if these are right for you.

- Nausea and vomiting, or loss of appetite, may lead to weight loss
  - Try bland food (not spicy or greasy) and eat small meals frequently through the day.
  - Ask your doctor about anti-nausea medication.

- Depression
  - If you feel depressed, talk to your doctor or healthcare professional.
  - Antidepressant drugs can help and are generally safe for your liver. Depression and personality change usually go away 2-4 weeks after treatment is over.

- Changes in the blood counts as in anemia
  - The doctor will check for this by doing blood tests and tell you what to do to improve your condition.

- Dry skin
  - Use moisturizers and drink lots of water.

- Mouth sores
  - Try bland, non-acidic food and supplements like Boost or Ensure.

### Dealing with Treatment

- Break your treatment into reasonable time periods, ie 12 weeks vs. 1 year
- Get your injections later in the day so you can sleep off the side effects
- If depression is an issue, consider going on anti-depressants pre-treatment
Factors that Reduce Treatment Success

- Cirrhosis (more advanced liver damage)
- Having genotypes 1 or 4 rather than 2 or 3
- Having a higher Hep C viral load (>400,000 IU/ml)
- Having HIV
- Being of African/Caribbean origin (black)
- Being older than 40

Factors that Reduce Treatment Success

- Drinking alcohol during treatment
- Having fatty liver
- Greater body weight (>75 kg or 165 lbs)
- Poor adherence
- Not managing side effects

Treatment Key Messages

Bob is a regular client who just tested positive for Hep C. He has been injecting for two years and had tried very hard not to share or use any of his equipment. He’s upset and confused about how he got Hep C and what the long term consequences will be. He thinks someone might have used his needle and not told him. Bob is anxious to know what he can do and when he might start getting sick.

Questions to consider...

- What other concerns might Bob have around his Hep C?
- Does how he got Hep C matter?
- What other harm reduction or prevention tools might Bob need?
- What are the potential risks and opportunities for Bob?
- What resources and referrals might you suggest to Bob?
Global Hep C Statistics
Hepatitis C estimated prevalence and number infected by WHO Region

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Total population (millions)</th>
<th>Hepatitis C Prevalence</th>
<th>Infected Population (millions)</th>
<th>Number of countries by WHO Region where data are not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>602</td>
<td>5.3</td>
<td>31.9</td>
<td>12</td>
</tr>
<tr>
<td>Americas</td>
<td>785</td>
<td>1.7</td>
<td>13.1</td>
<td>7</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>466</td>
<td>4.6</td>
<td>21.3</td>
<td>7</td>
</tr>
<tr>
<td>Europe</td>
<td>858</td>
<td>1.03</td>
<td>8.9</td>
<td>19</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>1,500</td>
<td>2.15</td>
<td>32.3</td>
<td>3</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>1,600</td>
<td>3.9</td>
<td>62.2</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>5,811</td>
<td>3.1</td>
<td>169.7</td>
<td>59</td>
</tr>
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</table>

Worldwide: 170 million people, 3% of the world's population

Hep C in Canada

- Around 250,000 Canadians, or 1% of the population, are infected with Hep C (high estimate)
- 1/3 of them are unaware they are infected and may be transmitting without realizing it
- Around 70% of new infections in Canada are related to injection drug use (IDU)

HCV prevalence in Ontario by exposure category, 2007

Co-infection with HIV

- Why is co-infection important?
  - Liver disease is the leading cause of death in people co-infected with Hep C and HIV
  - There is an important overlap in terms of the populations affected by these diseases
  - 20-25% of PHAs in Canada also have Hep C
  - Up to 80% of HIV+ IDU also have Hep C

Co-infection with HIV - Testing

- HIV increases the risk of a false negative Hep C antibody test (someone is really positive but the test comes back negative)
  - Especially if CD4 count is less than 200
  - The immune system is too weak to produce antibodies
  - Hep C RNA (viral load) test may be possible

Co-infection with HIV - Transmission

- HIV increases the risk of getting Hep C
  - Risk of vertical transmission of hepatitis C increases from 5-10% to up to 20%
- In men co-infected with HIV and HCV, HCV is more often found in the semen compared with HCV positive men without HIV
  - The presence of HCV in the semen combined with a weakened immune system may partially explain the enhanced risk that HIV positive men have for HCV infection when they engage in unprotected sex.
Co-infection with HIV

- Does Hep C make HIV progress faster?
  - It doesn’t look like it. Studies show different results.

- Does HIV make Hep C progress faster?
  - Yes. HIV reduces the chance that Hep C will clear on its own.
  - HIV increases the risk of progressing to fibrosis, cirrhosis and end-stage liver disease.

Co-infection with HIV - Treatment

- Hep C complicates HIV treatment
  - The liver may have a harder time processing anti-HIV drugs
  - Liver-toxic anti-HIV drugs may limit options
  - There are drug combinations you want to avoid:
    - AZT + ribavirin increases risk of anemia
    - ddI or d4T + ribavirin increases risk of lactic acidosis and pancreatitis
    - Abacavir may reduce ribavirin levels

- HIV has an impact on Hep C treatment
  - Treatment may have to start earlier
  - Treatment time maybe extended
    - From 24 weeks to 48 weeks in genotypes 2/3
  
    - There is a lower chance of treatment success, particularly in genotype 1.

- Which should be treated first, Hep C or HIV?
  - It depends on:
    - CD4 count
    - Stage of liver disease
    - Individual’s ability to take treatment
    - If CD4 is below 350, treating HIV is a priority
    - If CD4 has never been below 350, may choose to treat Hep C only
    - It is possible to treat both at the same time

Rates of Success of Treatment

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Co-Infection Key Messages

- Got HIV & Hep C?
  - Get informed, get care.

  - People can get both Hep C and HIV from sexual contact. Get tested for both so you know.
  - If you have HIV, you need to know about your hepatitis C status because your liver health is important.
  - If you are pregnant, talk to your healthcare provider about Hepatitis C.
  - HIV and Hep C don’t make you bad or bad in your liver and you need the strong that you want.
  - If your healthcare provider can help you decide when and how to treat both, ask or say a bit about it. You can’t treat both and your healthcare provider makes the right choice to help you healthy.

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Jane

Jane is a 30 year old female who has been coming to counselling for the last few weeks for cocaine use. In conversations with her you know she is sexually active; in the past couple of months she has slept with 3 different men and had unprotected intercourse with one of them. She tells you that she found out one of the men is Hep C positive and is “freaking out because what if I have Hep C now or HIV?”

Questions to consider...

• How comfortable are you talking about her sexual activity?
• To what services/programs would you refer Jane?
• What other concerns might Jane have as a result of her substance use and sexual risks?
• How might you help Jane prepare for the results of her tests, positive or negative?

Carol

Carol is a 37 year old mother of two children. She has just been released from prison where she served 18 months for trafficking. She tested positive for HIV and Hep C in jail. Carol is still in shock from this and is in great distress. She cries a lot, apologizes a lot and is in the office daily seeking help. Her family has cut her off from any support and her kids are in care.

Questions to consider...

• Is she on methadone?
• What support does she have?
• Is she receiving OW or ODSP?
• Does she have medical care and is she on HIV meds?
• What are the immediate concerns you have for her?
• Is she stably housed?
• Any other medical issues?

Contact Us

Nick Boyce, Provincial Director
nboyce@ohsutp.ca

CC Sapp, Provincial Trainer
ccsapp@ohsutp.ca

490 Sherbourne St., 2nd Floor
Toronto, ON M4X 1K9
1-866-591-0347 (toll free)
416-703-7348 (t)
416-703-3542 (f)
www.ohsutp.ca