Hepatitis C virus infection

May 2021
Introduction of hepatitis C

- Aetiology
- Routes of transmission
- Natural course
- Epidemiology
- Diagnosis
- Treatment
- Prevention
- Health education materials
Causes of hepatitis:

- Viral infection (most common)
- Alcohol, drugs, chemicals and genetic diseases, etc.

“Hepatitis” = “inflammation” of the liver
Currently there are 5 main types of hepatitis virus.

- **A**: Transmitted by faecal-oral route (food-borne infection)
- **B**: Transmitted through contact with blood or body fluid
- **C**: Transmitted through contact with blood or body fluid
- **D**: Transmitted through contact with blood or body fluid
- **E**: Transmitted through contact with blood or body fluid

**Hepatitis C** is a liver disease caused by hepatitis C virus.

Hepatitis C is transmitted through contact with blood or body fluid of an infected person.
Hepatitis C virus (HCV)

- Discovered in 1989
- Isolated from serum of a person with non-A non-B hepatitis
- Hepatitis C screening test was developed in 1990
- Six different genotypes
  - **Genotype 1** is the most common in Hong Kong
Distribution of HCV genotypes in Hong Kong*

- Genotype 1: 33.6%
- Genotype 2: 48.8%
- Genotype 3: 10.8%
- Genotype 4: 3.2%
- Genotype 6: 0.9%
- Mixed: 0%

Genotype distribution among PWID
- Genotype 1: 39.8%
- Genotype 6: 43.4%

* Genotype distribution of the 2699 hepatitis C patients in public hospitals between January 2005 and March 2017

Transmission of HCV

Blood contact (most common)

Sharing equipment for injecting drugs

Transfusion of unscreened blood and blood products

Reusing inadequately sterilised medical equipment
Transmission of HCV

Sexual contact

- HCV transmission through sexual contact is uncommon
- It can occur if both partners have skin or mucosal lesions and do not use condoms during sex, especially for sexual practices that lead to exposure to blood.

- Higher risk of infection among
  - Men who have sex with men (MSM)
  - HIV-positive people
  - People having sexually transmitted disease
  - People having rough sex
Transmission of HCV

Mother-to-child transmission (MTCT)

- Uncommon
- The estimated risk of MTCT is about 4 - 8%
- The risk can be twofold to fourfold higher when the mother is co-infected with HIV
- Currently there is no proof that breastfeeding can transmit HCV
HCV is not transmitted through social contact.

- sharing eating utensils
dining together
- hugging
holding hands
kissing
- coughing
sneezing
Infection with HCV can cause both acute and chronic hepatitis.

Acute HCV infection is usually self-limiting. It rarely causes hepatic failure, but can lead to chronic infection.

Chronic HCV infection often follows a progressive course over many years, which can ultimately result in cirrhosis, liver cancer and the need for liver transplantation.
Acute HCV infection

- Incubation period ranges from 2 weeks to 6 months (usually 6 - 9 weeks)
- Newly acquired HCV infections are usually (~80%) asymptomatic
- Symptoms indistinguishable from hepatitis of other causes

- Fever
- Fatigue
- Nausea
- Loss of appetite
- Jaundice
- Upper abdominal discomfort
- Vomiting
- Diarrhoea, tea-coloured urine
About 70% people infected with HCV are unable to clear the virus, and will develop chronic hepatitis.

Chronic HCV infection can remain asymptomatic until decades after infection, when signs and symptoms develop secondary to serious liver damage.

If symptoms occur with chronic HCV infection, they can be a sign of advanced liver disease (e.g. cirrhosis and liver cancer), which can hardly be treated.

Liver cancer is a silent killer

In Hong Kong, about 7% with liver cancer have HCV infection.
Epidemiology

Epidemiology

Populations at increased risk of HCV infection:

- People who inject drugs (PWID)
- Non-injecting drug users
- Men who have sex with men (MSM)
- Recipients of potentially contaminated blood products
- Patients on renal dialysis
- Children born to mothers infected with HCV
- HIV+ people
- Prisoners
- People who have had tattoos or piercings
HCV infection is common among people who inject drugs (PWID).

Globally, more than 60% of PWID ever have HCV infection.

HCV can be easily transmitted through contact with blood. Sharing needles, syringes or other equipment for injecting drugs can spread the infection.
Before 1991, HCV antibody test on the collected samples of donated blood was not available

A systematic look-back exercise was undertaken in 1990s to ensure that patients potentially infected with HCV through transfusion of contaminated blood or blood products were traced, investigated and managed

With advancement in diagnostic technology, the current residual risk of HCV in a blood product is less than 1 in 1,000,000 in Hong Kong
HCV infection in Hong Kong

- An epidemiological study conducted in 2015-16:
  - ~ 0.3% of the general population in Hong Kong infected with HCV

- Given the low HCV prevalence in Hong Kong, a risk-based case-finding approach is recommended
- Targeting people with risk behaviours for HCV and those with known or potential exposure to HCV

- HCV prevails in some specific populations.

HCV infection among PWID in Hong Kong

Among PWID in Hong Kong, prevalence of past or current HCV infection (anti-HCV)

- 85% (2006, methadone clinics)
- 81.7% (2011, gathering places of PWID)
- 76.4% (2014, gathering places of PWID)
- 73.4% (2009 – 2018, targeted screening of ex-PWID)

Reference
HCV infection must be diagnosed through blood test, but not from the symptoms.

- **Antibody against HCV (anti-HCV)**
  As a screening test to determine whether a person has past exposure to HCV.

- **HCV ribonucleic acid (HCV RNA)**
  As a confirmatory test to determine whether a person currently has HCV infection.

People tested positive for both anti-HCV and HCV RNA are diagnosed as having HCV infection.
Diagnosis of HCV infection

Screening test*

- Blood taking
- Finger prick

Positive
- Confirmatory test**
  - Positive: Current HCV infection
  - Negative: Cured or recovered from past HCV infection

Negative
- No past or current HCV infection
Testing for HCV is recommended for ALL current or former PWID

- including those who injected drugs only once or few times years ago
- no matter whether they have symptoms
World Health Organization recommends

- offering treatment to all individuals diagnosed with HCV infection who are ≥ 12 years, irrespective of disease stage

- use of pangenotypic direct-acting antiviral (DAA) regimens for the treatment of persons with chronic HCV infection aged ≥ 18 years
Highly effective (>90% cure rate)

Minor side effects

Short duration (8 – 12 weeks)

Oral (not injection)

Direct-acting antiviral, DAA

Treatment for HCV infection
HCV treatment in the past

Interferon-based regimens with ribavirin

- Success rate of viral clearance and duration of treatment course depend on HCV genotype
- For genotype 1 (most common in HK), success rate between 40% and 50%
- Interferon-based regimens are fraught with significant adverse effects that are difficult to manage
Treatment for HCV infection

Goal

- To achieve sustained eradication of HCV
- To reduce the risk of progression to cirrhosis, hepatocellular carcinoma (HCC) and decompensated liver disease requiring liver transplantation
- To reduce the risk of liver-related mortality

Sustained virological response (SVR)

- An indicator for treatment success
- Defined as persistent absence (viral load in undetectable level) of HCV RNA in serum 12 weeks after antiviral treatment
With widespread treatment of HCV, the number of persons capable of transmitting HCV would decline dramatically, which could have a major impact on HCV incidence and the overall HCV epidemic.

Mathematical models showed that even modest increases in successful HCV treatment among PWID could decrease prevalence and incidence of HCV infection.

WHO cited treatment for PWID as a critical means in achieving the elimination of HCV.

Active injection drug use is not a contraindication to antiviral therapy, as long as the patient wishes to be treated and is willing and able to adhere to close monitoring during treatment.
Points to note

- If there is deteriorated liver function, cirrhosis and its complication before treatment, regular examination is still required.

- Although clearance of HCV reduces the risk of HCC occurrence, the risk of developing HCC remains substantial for persons who have advanced liver fibrosis or cirrhosis prior to HCV treatment.

- Individuals who meet HCC surveillance criteria prior to HCV treatment should continue to receive HCC surveillance every 6 months after achieving an SVR with HCV treatment.
As treatment does not confer protective immunity, recovered hepatitis C patients should stop high-risk behaviours to prevent HCV reinfection.
Currently, there is no vaccine to prevent HCV infection.
Preventing HCV infection

⚠️ Stop injecting drug use
- Get into methadone treatment programme
- Blood attached to a used needle, even in amounts too small to see, can dissolve in water and contaminate the containers and other equipment, such as filters and spoons, and pose risk of HCV transmission

⚠️ Avoid sharing personal care items (e.g. razors and toothbrushes) that are potentially contaminated with blood

✔️ Use condom when having sex
Counselling for hepatitis C

- Discussions about the routes of HCV transmission
  - Advice on preventive measures to decrease the risk of transmission to other individuals

- Diet and behaviors
  - Patients should be informed about the potentially modifiable factors that are associated with accelerated liver disease, including alcohol use, obesity and insulin resistance, and marijuana use
  - Advise complete avoidance of alcohol
  - Advise weight loss in obese patients
  - Advise cessation of cigarettes and marijuana
## Hepatitis B and C

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<tr>
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<th>Hepatitis B</th>
<th>Hepatitis C</th>
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<tr>
<td><strong>Symptoms</strong></td>
<td>Mostly asymptomatic</td>
<td></td>
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<tr>
<td><strong>Disease progression</strong></td>
<td>Both can cause chronic hepatitis, which may lead to cirrhosis and liver cancer</td>
<td></td>
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<tr>
<td><strong>Transmission</strong></td>
<td>Blood-borne, most commonly through MTCT</td>
<td>Blood-borne, commonly through blood contact like injecting drug use</td>
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<tr>
<td><strong>Vaccine</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Regular monitoring and consider antiviral for viral suppression</td>
<td>Curative antiviral treatment available</td>
</tr>
<tr>
<td><strong>Protective antibody</strong></td>
<td>Antibody acquired through vaccination or recovery from acute infection can prevent infection</td>
<td>Antibody does not confer protective immunity. There is a chance for re-infection.</td>
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丙型肝炎可致肝癌

丙型肝炎是由丙型肝炎病毒引起的肝炎疾病。慢性丙型肝炎可引致肝硬化及肝癌。

診斷丙型肝炎需透過血液測試

現時或曾經注射毒品人士，包括在多年前只注射過一次或數次毒品的人士，無論有沒有症狀，均應接受丙型肝炎測試。

口藥物可治療丙型肝炎

服用直接抗病毒藥物約8-12個星期可治療丙型肝炎（即可「斷毒」），從而降低發展成肝癌及因肝臟疾病致死的風險。

療效顯著
副作用少
口服藥物（毋須注射）

丙型肝炎患者服用藥物康復後，並不會有具保護性的免疫力，故仍然需要注意以下事項：

1. 停止注射毒品
   - 接受戒毒治療
   - 用過的針筒可能沾有血液，即使是難以用肉眼察覺到的極少量。
   - 避免直接接觸到藥物或其它器皿。肝炎病毒可透過不徹底的處理而繼續存活。

2. 避免與他人共用剃刀及牙刷等有機會受血液污染的個人護理用品

3. 進行性行為時使用安全套

丙型肝炎患者

已治癒丙型肝炎
或
已從數百丙型肝炎中康復

丙型肝炎病毒感染

>60%

輕肝

慢性肝炎
肝硬化
肝癌

感染丙型肝炎病毒後可持續數十年都沒有症狀，直至肝臟已被嚴重損害後才出現症狀。丙型肝炎很容易經接觸感染者的血液而傳播，共用針筒、針筒或其它器具注射毒品可傳染丙型肝炎病毒。

在香港，估計超過六成的注射毒品人士患有丙型肝炎。

Getting tested for hepatitis C can save your life

www.hepatitis.gov.hk
肝炎熱線 2112 9911

2021年3月
丙型肝炎你要知
What you need to know about hepatitis C

甚麼是丙型肝炎？
丙型肝炎是由丙型肝炎病毒引起的肝臟疾病。約七成的丙型肝炎病毒感染發展為慢性肝炎，並可引致肝硬化及肝癌。

丙型肝炎是怎樣傳播？
丙型肝炎病毒是透過接觸感染者的血液而傳播。

- 丙型肝炎病毒不會經一般社交接觸（如共用餐具、共用、接吻、握手及擁抱等）而傳播。
- 丙型肝炎病毒不會經一般性接觸而傳播。

丙型肝炎是否由母親傳給嬰兒嗎？
丙型肝炎病毒可由母親傳給嬰兒。但很罕見，
- 母親傳給機率估計為1-8%。
- 若母親同時感染愛滋病病毒，嬰兒傳染的風險會高2-4倍。

患有丙型肝炎的母親可以餵哺乳嗎？

- 沒有證據顯示丙型肝炎病毒會經乳汁傳播給嬰兒。
- 若乳頭破損及血清，應停止餵哺母乳，直至乳頭傷口癒合。

誰具較高感染風險？

- 佔約0.3%的香港人口患有丙型肝炎，但在某些特定群組中較為常見。

如何診斷丙型肝炎？

- 感染丙型肝炎病毒後可持續數十年甚至數十年沒有症狀，但至肝臟已被嚴重損害後才出現症狀。
- 診斷丙型肝炎必須透過血液測試。

如何治療丙型肝炎？

- 使用直接抗病毒藥物約8-12個星期可治療丙型肝炎（即「斷根」），從而降低發展成肝癌及丙型肝炎有關的死亡風險。

- 藥物治療	
- 副作用少
- 口服藥物（毋須注射）

請注意：
丙型肝炎患者應適當避免接觸，並會有具保護性的免疫反應，故停止進行高風險行為，以預防再次感染丙型肝炎病毒。

www.hepatitis.gov.hk
肝熱線 2112 9911
Key facts of HCV infection

1. The prevalence of HCV infection among PWID is high in Hong Kong.
2. Chronic HCV infection can cause serious liver diseases.
3. Blood test is required to diagnose HCV infection.
4. Oral drugs can cure HCV infection.
To know more......

www.hepatitis.gov.hk
Hepatitis Hotline  2112 9911
Video of the Action Plan

Hong Kong Viral Hepatitis Action Plan 2020–2024
www.hepatitis.gov.hk
## Resources

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<th>Hyperlink</th>
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<td>Hong Kong Viral Hepatitis Action Plan 2020 - 2024</td>
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