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

“Hepatitis” = “inflammation” of the liver

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

E

C

D

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

* 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

읿 HCV transmission through sexual contact is uncommon

ӌ 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.

ӌ 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
Chronic HCV infection

- 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

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 or Finger prick

Positive

Confirmatory test**

Positive

Current HCV infection

Negative

No past or current HCV infection

Negative

Cured or recovered from past HCV infection
Diagnosis of 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 $\geq 12$ years, irrespective of disease stage

- use of pangenotypic direct-acting antiviral (DAA) regimens for the treatment of persons with chronic HCV infection aged $\geq 18$ 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
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.
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

<table>
<thead>
<tr>
<th></th>
<th>Hepatitis B</th>
<th>Hepatitis C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptoms</strong></td>
<td>Mostly asymptomatic</td>
<td></td>
</tr>
<tr>
<td><strong>Disease progression</strong></td>
<td>Both can cause chronic hepatitis, which may lead to cirrhosis and liver cancer</td>
<td></td>
</tr>
<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>
</tr>
<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>
</tr>
</tbody>
</table>
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。

診斷丙型肝炎須透過血液測試
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。

口服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「斷尾」），從而降低發展成肝癌及因肝臟疾病致死的風險。

測試丙肝
可救你一命

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徵狀。
丙型肝炎很容易經接觸感染者的血液而傳播，共用針咀、針筒或其他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。

>60%

丙型肝炎病毒感染

丙型肝炎
慢性肝炎
肝硬化
肝癌

圖检測

陽性
陰性

確認測試**

丙型肝炎病毒

丙型肝炎患者
已治癒丙型肝炎
或
已從過往丙型肝炎中康復

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

進行性行為時使用安全套

www.hepatitis.gov.hk
肝炎熱線 2112 9911

*圖檢測：抗體測試判斷曾否感染丙型肝炎病毒
**確診測試：核酸測試判斷現時是否帶有丙型肝炎病毒
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。
約七成人感染丙型肝炎病毒後會發展為慢性肝炎，
並可引致肝硬化及肝癌。

丙型肝炎病毒及感染
慢性肝炎	肝硬化
t	肝癌

大多數新感染丙型肝炎的患者都沒有明顯
症狀，部分潛性患者會出現與其他肝炎病徵類似
的症狀，如發燒、疲勞、食欲不振、噁心、
嘔吐、上腹部不適、黃色小便及黃疸（皮膚和
眼白發黃）。

丙型肝炎怎樣傳播？
丙型肝炎病毒主要透過接觸感染者血液而
傳播。

- 與共用器具注射毒品
- 載用未經消毒的
- 接觸到自我傷
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒的
- 接受腎臟透析的病人
- 感染丙型肝炎的人士
- 資源輸入多處
- 使用遺棄的
- 載用未經消毒の
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Topic</th>
<th>Hyperlink</th>
<th>Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video</td>
<td>Hong Kong Viral Hepatitis Action Plan 2020 - 2024</td>
<td><a href="https://www.youtube.com/watch?v=VaHs-DZWXEM">https://www.youtube.com/watch?v=VaHs-DZWXEM</a></td>
<td><img src="#" alt="Cover" /></td>
</tr>
<tr>
<td>Type</td>
<td>Topic</td>
<td>Hyperlink</td>
<td>Cover</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Poster</td>
<td>Getting tested for hepatitis C can save your life</td>
<td><a href="http://www.hepatitis.gov.hk/tc_chi/resources/files/Poster_Getting%20Tested%20for%20Hep%20C_WCAG_final.pdf">www.hepatitis.gov.hk/tc_chi/resources/files/Poster_Getting%20Tested%20for%20Hep%20C_WCAG_final.pdf</a></td>
<td>![Poster Cover]</td>
</tr>
<tr>
<td>Pamphlet</td>
<td>Getting tested for hepatitis C can save your life</td>
<td><a href="http://www.hepatitis.gov.hk/tc_chi/resources/files/Pamphlet_Getting%20Tested%20for%20Hep%20C_WCAG.pdf">www.hepatitis.gov.hk/tc_chi/resources/files/Pamphlet_Getting%20Tested%20for%20Hep%20C_WCAG.pdf</a></td>
<td>![Pamphlet Cover 1]</td>
</tr>
<tr>
<td>Pamphlet</td>
<td>What you need to know about hepatitis C</td>
<td><a href="http://www.hepatitis.gov.hk/tc_chi/resources/files/Pamphlet_What%20you%20need%20to%20know%20about%20hep%20C_WCAG.pdf">www.hepatitis.gov.hk/tc_chi/resources/files/Pamphlet_What%20you%20need%20to%20know%20about%20hep%20C_WCAG.pdf</a></td>
<td>![Pamphlet Cover 2]</td>
</tr>
</tbody>
</table>