Strategy 4
Treatment

1. Enhancement of treatment for hepatitis B
2. Expansion of access to direct-acting antivirals for HCV
3. Micro-elimination of HCV infection
4. Promotion of HCV testing in people who inject drugs

Current available treatments can control chronic HBV infection effectively through inhibiting viral replication and cure chronic HCV infection, resulting in substantial reduction in HBV- or HCV-related morbidity and mortality.

To reduce hepatitis-related mortality, providing effective treatment for people infected with HBV and/or HCV is crucial.

Strategy 4.1: Enhancement of treatment for HBV infection

79. The WHO has set out targets on eliminating viral hepatitis by 2030, which calls for 90% diagnosis rate and 80% treatment rate respectively.

80. Although Hong Kong has implemented universal neonatal vaccination in 1988, the time between initial infection and onset of complications, like cirrhosis and liver cancer, usually takes decades. This implies that the burden of disease attributable to HBV infection will remain high in Hong Kong for several decades. Currently, the estimated prevalence of HBV infection is 7.2%, which amounts to around 540 000 hepatitis B patients.

81. Essentially all patients with chronic HBV infection require long-term medical care:

- Antiviral treatment should be initiated in patients who are at high risk of HBV-related morbidity, and who are likely to benefit from treatment.
- Patients who are not immediately eligible for treatment should be monitored and started on antiviral therapy when indicated.
- As chronic HBV infection contributes significantly to the development of liver cancer (hepatocellular carcinoma [HCC]), many expert guidelines recommend regular HCC surveillance, which usually comprises of liver ultrasonography and measurement of serum alpha-fetoprotein (AFP), in at-risk individuals [56].

82. To meet the WHO targets, both diagnosis and treatment capacity for HBV infection should be built up in order to meet the substantial demand.

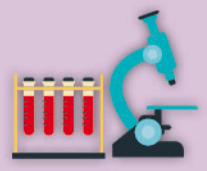
83. Given the limited healthcare resources and competing needs arising from the aging population, short- and long-term plans are needed to augment and optimise the management capacity for HBV infection in the public and private sector.

84. Primary care providers should be involved in the diagnosis and management of hepatitis B patients in the community setting. Therefore, shared management based on close collaboration among general practitioners, family physicians and hepatologists, through the identification of their respective tasks, needs to be explored for better diagnostic and therapeutic management of the patients.

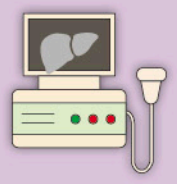
Actions

4.1.1 To augment the diagnosis and treatment capacity for HBV infection, enhancements in HA in four areas, including laboratory, equipment, drug and model of care, will be required.

- Laboratory capacity will be built up to dovetail with the implementation of initiative for preventing MTCT of HBV in HA hospitals.



- The equipment for transient elastography measured by ultrasound-based device for assessing severity of fibrosis in viral hepatitis will be scaled up. HA plans to procure one device for each hepatitis clinic, which is either in lack of such equipment or in need of replacement.



- To enhance the service on preventing MTCT of HBV, the initiative for providing antivirals to HBV-infected pregnant women with high viral load will be implemented: the indications for the appropriate antivirals in HA Drug Formulary were widened starting from January 2020, coupled with additional drug funding to be injected in 2020 - 21.

- The nurse clinic model is adopted as a measure to augment the capacity of liver clinic. The hepatitis nurse would assist hepatologists in assessing and managing stable hepatitis patients according to the established protocol. The nurse would also help in performing transient elastography measurement and counselling patients, especially for pregnant women receiving antiviral treatment. The nurse clinics are being set up in QMH and PWH in 2020 as a pilot programme and will be implemented in other hospitals in the coming years.

4.1.2 Periodic review will be conducted to assess if scaling up of the programme is necessary to cope with the increasing demand for diagnosis and treatment of patients with viral hepatitis.

To sustain and to expand the service provision on hepatitis management, it is crucial to explore strategies to enhance management capacity for HBV infection, by both public and private sectors, in the long run.

4.1.3 Hepatologists should be engaged to explore strategies to enhance service capacity for HBV infection in both public and private settings.

4.1.4 Primary care physicians should also be engaged to support management of HBV infection at primary care setting.

4.1.5 Guidance on practice and referral mechanism to support management of HBV infection at primary care setting should be developed.

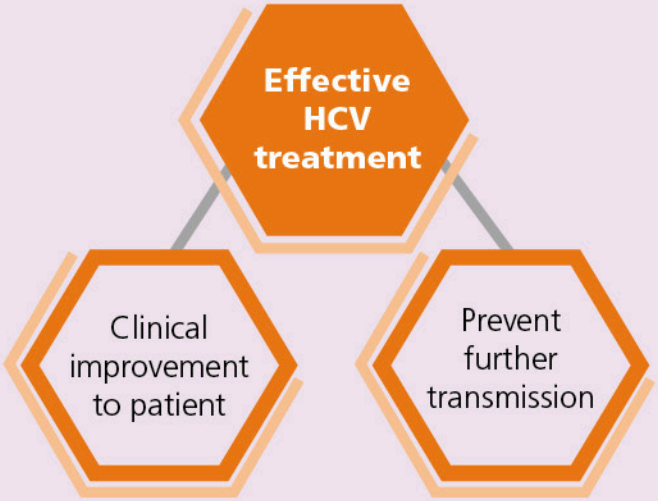
4.1.6 The developed guidance on practice and referral mechanism will then be promulgated in order to optimise the capacity in caring patients with hepatitis B in the community setting.

4.1.7 As part of the clinical management of HBV infection, the service need of ultrasound for HCC surveillance would be estimated.

85. While focusing on making recommendations that could be implemented with existing knowledge and available means to improve treatment capacity of HBV infection, it is agreed that exploration and deliberation on feasible approaches to draw on the capacity and resources of the private health sector to test and treat HBV infection is required. This may include exploring potential healthcare delivery models to reduce financial barriers to the general population to access care in the private sector, defining the role of the public and private services and establishing the level of care needed to manage hepatitis B patients of different disease stages, etc.

Strategy 4.2: Expansion of access to direct-acting antivirals for HCV

86. Curing chronic HCV infection has immense clinical benefit [57]. Cured patients, even those already with cirrhosis, may experience a reversal of hepatic fibrosis over time [58,59]. Reduction in fibrosis and return to normal liver function are associated with a decreased risk of hepatic decompensation, HCC and all-cause mortality [60,61]. Furthermore, curing chronic HCV infection can also help eliminate HCV transmission [62,63].



87. Simple yet effective options of DAA are now available for all genotypes, and for treatment-experienced as well as naïve [5]. The cure rates are typically in excess of 90%.

88. Albeit with high cure rates, DAA does not confer immunity against future HCV infection. Reinfection can occur if risk behaviour persists.

HCV treatment indication

89. Currently, WHO recommends treatment to all individuals diagnosed with HCV infection who are aged 12 or above, irrespective of disease stage [5]. In children aged less than 12 with chronic HCV infection, WHO recommends deferring treatment until 12 years of age.

Local situation

90. Prior to 2019, only patients with advanced fibrosis or cirrhosis who were contraindicated or intolerant to conventional interferon-based therapy are eligible for subsidised DAA treatment in HA.

91. Treatment of HCV is not only constrained by the provision of DAA, but also the equipment and laboratory facilities for diagnosis and management of the infection. Enhancing the capacity for these factors is also required to treat and manage HCV infection.

Actions

4.2.1 DAA should be the integral part of the HCV treatment. The use of DAA will be extended to milder stages of disease as indicated by the degree of liver fibrosis and eventually to all patients with HCV infection. Thus, a policy initiative to deploy DAA in HCV treatment in a stepwise manner should be established.

4.2.2 HA Drug Formulary indication for DAA treatment is expanded from advanced fibrosis (F3 and F4 on transient elastography) to F2 in the second quarter of 2019 to increase treatment capacity of HCV.

4.2.3 Further expansion of DAA aiming to treat all patients diagnosed with HCV infection regardless of their disease severity (i.e. degree of fibrosis) will be implemented in 2021.

4.2.4 The number of patients treated with DAA will be reviewed.

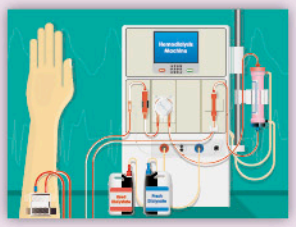
Strategy 4.3: Micro-elimination of HCV infection

92. Micro-elimination is targeted elimination of HCV infection in well-defined populations. It is a strategy to achieve elimination incrementally through initiatives that eliminate hepatitis C for defined segments of the population, such as within settings, geographic areas, subpopulations and age cohorts [64]. Targeting smaller and clearly delineated HCV risk groups allows for faster and more efficient delivery of interventions [65]. The selection of targeted groups for micro-elimination initiatives should be based on the burden of hepatitis C.

Local situation

93. The prevalence of HCV infection in people on renal dialysis and HIV-positive people is significantly higher than that in the general population. HCV screening is being conducted in these populations.

Strategy 4.3.1
Screen and treat patients with end stage renal failure on dialysis



94. HCV infection is implicated in adverse hepatic outcomes in patients undergoing dialysis [66]. In addition, accumulating evidence has shown that chronic HCV infection can have serious consequences for different organs and systems other than the liver. The extrahepatic manifestation of chronic HCV infection can explain the relationship between HCV infection and decline in kidney function in patients with chronic kidney disease [67].

95. Transmission of HCV infection and even outbreaks has been reported in dialysis unit. Transmission of HCV in haemodialysis unit has been reported to be associated with procedures with blood exposure, where contamination can involve the dialyser, connection tubing, needles and even via blood spillage to the surroundings [68].

96. Prevention of transmission of HCV in haemodialysis patients has improved over the years due to better screening of blood products, improved dialysis procedures, and lesser demand for blood transfusion with the availability of erythropoiesis-stimulating agents. However, HCV prevalence remains far higher in people receiving haemodialysis than in the general population [69]. In Hong Kong, the prevalence of HCV in patients receiving dialysis is 1 - 2%, while that in the general population is reported to be 0.3% [19].

97. Treating HCV infection in patients on dialysis would achieve **"treatment as prevention"** outcome of reducing the incidence of transmission in dialysis units when coupled with appropriate infection control measures. It would also reduce the risk of HCV exposure to healthcare workers caring for this group of patients.

Haemodialysis recipients in Hospital Authority

98. As part of infection control measures, rigorous HCV screening is being conducted in this population. Some of the haemodialysis patients, who are tested positive to anti-HCV, may have already received DAA treatment if they are on renal transplant waiting list or they have significant liver fibrosis. While strict adherence to infection control measures remains the most important way to prevent HCV transmission in dialysis unit, treating patients with DAA can further reduce the risk of transmission by reducing viraemia of infected patients.

Peritoneal dialysis recipients in Hospital Authority

99. Evidence on iatrogenic HCV transmission in patients receiving peritoneal dialysis is scarce mainly because the major mode of renal replacement therapy in developed countries is haemodialysis. However, peritoneal dialysis is the first-line option of renal replacement therapy in HA and the major mode of renal replacement therapy in Hong Kong.

100. Although the risk of HCV transmission should be lower in peritoneal dialysis, compared to haemodialysis, infection can still occur during exposure of body fluid or wound, like intermittent peritoneal dialysis or rapid fluid exchange, treatment of Tenckhoff catheter wound. In addition, a significant portion of patients on peritoneal dialysis may be switched to haemodialysis with time. Sometimes they may even require urgent haemodialysis due to acute medical condition. Therefore, DAA therapy is also beneficial to this group of patients.

DAA treatment in patients with end stage renal failure undergoing dialysis

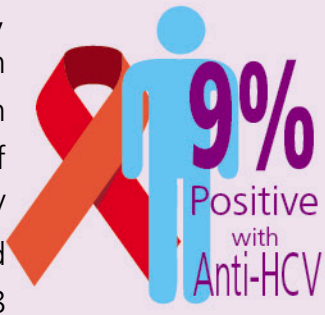
101. HCV infection was previously treated with interferons and ribavirin therapies. Both are eliminated by the kidneys, requiring significant dose reduction in patients with impaired kidney function. Interferon-based therapies have poor efficacy and a high adverse event rate in patients on dialysis. Now, treatment options have been expanded in dialysis recipients with approved DAA combinations, which are not eliminated by the kidney, and thus do not require dose adjustment [70].

Actions

4.3.1.1 A policy initiative to provide DAA for HCV treatment in all patients undergoing dialysis should be established.

4.3.1.2 DAA therapy should be provided to patients with end stage renal failure undergoing dialysis (both haemodialysis and peritoneal dialysis) in HA, irrespective of their liver fibrosis stage or candidacy for kidney transplant. It is expected that patients on dialysis, who are currently diagnosed with HCV infection, would all be treated by the second quarter of 2021.

Strategy 4.3.2
Screen and treat patients co-infected with human immunodeficiency virus



102. Both HIV and HCV infections are global health issues, with approximately 37.9 million and 71 million people living with HIV and chronic HCV infection respectively [2,71]. Owing to the shared mode of transmission, HCV is reported to affect 6.2% of HIV population worldwide, which is largely contributed by people who inject drugs (PWID) [72]. From 2008 to 2018, out of 4 186 patients with HIV in Hong Kong, screening showed that 377 (9%) were positive with anti-HCV [19].

103. HCV infection adversely affects clinical outcome in patients co-infected with HIV. With better antivirals and longer survival of patients with HIV/AIDS, liver disease is becoming one of the major causes of morbidity and mortality. HIV/HCV co-infection accelerates the development of HCV-related liver complications, such as cirrhosis and HCC [73]. In addition, chronic HCV infection increases the risk of drug induced liver toxicity in HIV patients receiving antiretroviral therapy.

104. In addition to curing individuals with HCV infection, offering DAA to HIV/HCV co-infected patients can also achieve "treatment as prevention" by reducing the transmission pool of HCV among HIV-positive people. Together with education and counselling on prevention of re-infection, elimination of HCV is possible in the HIV-positive population.

105. HIV/HCV co-infected patients currently under the care of HA or DH clinics represent an appropriate group for micro-elimination as they are already engaged in healthcare system with regular follow-up and monitoring.

DAA therapy in patients co-infected with HIV

106. Indication and choice of DAA is similar between mono-infected and co-infected patients. Comparably high efficacy of DAA is demonstrated in HIV/HCV co-infected population with cure rate over 90% [74]. The main consideration in prescribing DAA in co-infected patients is to be aware of potential drug-drug interaction with antiretroviral therapy.

Actions

4.3.2.1 A policy initiative to provide DAA for HCV treatment in all HIV-positive patients should be established.

4.3.2.2 DAA therapy would be adopted in patients co-infected with HCV and HIV, who are having follow-up in HIV clinics in HA and DH, irrespective of their liver fibrosis status. The initiative plans will start in 2020 - 21 with an aim to complete treating currently diagnosed HIV/HCV co-infected patients within 12 - 24 months.

4.3.2.3 The number of patients co-infected with HCV and HIV treated with DAA should be reviewed.

4.3.2.4 The risk of HCV re-infection among HIV-positive patients cured of HCV should be assessed.

Strategy 4.4: Promotion of HCV testing in people who inject drugs

107. The burden of HCV infection is considerable among PWID, with an estimated prevalence of greater than 40%, representing an estimated 6.1 million people worldwide who have recently injected drugs living with HCV infection [75]. As such, PWID are a priority population for enhancing prevention, testing, linkage to care, treatment and follow-up care in order to meet WHO hepatitis C elimination goals by 2030.

108. Testing current or former PWID for HCV infection is recommended by international guidelines. The Centers for Disease Control and Prevention in the United States also recommends that screening should include those who injected drugs only once [76].

109. Given the high prevalence of HCV in PWID in Hong Kong, testing HCV infection in PWID and linking them to treatment play a key role in promoting the achievement of the WHO elimination goals by 2030.

Treatment as prevention

110. Treatment can prevent further HCV transmission in the PWID population. There is growing evidence supporting the strategy of "treatment as prevention" to reduce transmission of HCV in PWID [77]. Several mathematical models have shown that even modest increases in successful HCV treatment among PWID can decrease prevalence and incidence [78,79]. The focus is now on how best to optimise treatment delivery to maximise the benefits of treatment as prevention strategy. As such, treatment scale-up amongst PWID are key to achieving these elimination targets, as shown in multiple HCV modelling studies [80,81].

111. PWID are a hard-to-reach population because they may not be able to adhere to the highly structured secondary or tertiary care settings in which HCV assessment and treatment are usually provided [82]. Recruiting PWID for health programme shall be considered in alternative institutions, such as methadone clinics and correctional facilities.

Methadone clinics

112. Hong Kong adopts a multi-modality approach in providing treatment and rehabilitation (T&R) services to meet the varying needs of drug abusers. DH operates the Methadone Treatment Programme (MTP) through its network of methadone clinics (MCs) for opiate abusers.

113. On admission to MTP, the doctor of MCs will conduct a detailed and structured assessment of the clients, which covers their medical, social history and physical conditions. Apart from medical assessments by doctors, services provided at the clinics include counselling, referral to other professional managements, and vaccinations.

Box 3. Services in methadone clinics

In Hong Kong, the Government is providing treatment of opioid abuse at methadone clinics.

Services available in methadone clinics include -

(i) medical assessment and health education;
(ii) dispensing of methadone for maintenance or detoxification therapy;
(iii) guidance and counselling by social workers; and
(iv) referral to other drug treatment service agencies as appropriate.

114. Currently, there are around 5 200 people registered with methadone clinics, with an average 3 900 daily attendance [83]. Hence, methadone clinic can serve as a platform where many PWID can be reached.

Correctional facilities

115. It has been reported that there are relatively high proportions of PWID among the prison population [84]. It is probably due to the criminalisation of drug use and the engagement in criminal activity to fund illicit drug habits [85,86].

116. There is oversea evidence indicating the feasibility and effectiveness of HCV treatment initiated in prisons, which can achieve a comparable or even better treatment outcomes than that for community-based treatment [87,88].

117. In Hong Kong, all correctional institutions have healthcare services. Persons in custody who need specialist care are referred to visiting specialists or public hospitals for follow-up.

HCV testing at community setting

118. To achieve good testing coverage by encouraging people coming forward for testing HCV, the principles of voluntary testing and confidentiality must be observed.

119. Quality-assured point-of-care tests (POCT) of anti-HCV, testing on finger-prick blood or oral fluid, have the potential to increase the number of people who get tested. Upon the delivery of POCT results, healthcare worker should take the opportunity to educate the individual about HCV infection, including its transmission, prevention and disease progression. For confirmed anti-HCV-positive cases, an HCV RNA test should be offered to diagnose a viraemic HCV infection.

Linkage to care

120. Following diagnosis of active HCV infection, all patients should be linked to a comprehensive HCV management. Of note, patient-level, structural and economic factors may hinder the successful uptake of testing and linkage to care and prevention for HCV infection among PWID.

Actions

4.4.1 A policy initiative to promote HCV testing in PWID, who are attending methadone clinics or under the custody of Correctional Services Department should be established. Successful implementation of the PWID-targeted programmes in these settings requires careful consideration of implications on the existing medical and nursing care, as well as management capacity from Specialist Out-patient Clinics of HA. Hence, it should be thoroughly discussed and planned to ensure satisfactory and sustainable linkage of care.

Initially, it can be achieved by the following actions.

4.4.2 Specific educational information about HCV transmission through contaminated needles, syringes and injection equipment, access to HCV testing and treatment should be provided to PWID.

4.4.3 Professional staff and other workers serving PWID at methadone clinics should be engaged to promote the importance of HCV infection.

4.4.4 Testing options and algorithms for carrying out HCV testing would be identified. A pilot programme involving selected MCs would be carried out to test the feasibility and assess the acceptance of HCV testing among PWID upon agreement on the details with the stakeholders. The information gained from the pilot can also help better characterise the barriers to HCV testing and care, and devise strategies to overcome them. Collaboration with academics for the exploration and identification of the optimal test-and-treat strategies in this hard-to-reach population should also be explored.

4.4.5 Staff of Correctional Services Department should be engaged and provided with health education about HCV infection.