Chinese Taipei can eliminate hepatitis

Hepatitis Elimination Profile

Hepatitis B virus (HBV)

YES

HBV elimination goal ¹

Elaboration:

Chinese Taipei has achieved >=98% HepB3 vaccine coverage and >=90% HepB birth dose coverage since 1989.

The prevalence of HBsAg in <=5 year-old children greatly declined afterwards, with an estimate of 0.16% in 2019.

It is expected that the WHO goal for elimination of HBV mother to child transmission in terms of a HBsAg prevalence among 5 year olds of <=0.1%, will be achieved by 2030.

Hepatitis C virus (HCV)

YES

HCV elimination goal ²

Elaboration:

"YES, 2025"

Action Plan

Action Plan
THE HEALTH BURDEN OF VIRAL HEPATITIS

**2,185,090**
Number of persons living with HBV infection, 2016

9%
Prevalence of HBsAg+, 2016

**322,000**
Persons living with chronic HCV infection, 2019

1%
Prevalence of chronic HCV infection, 2020

88.1%
Prevalence of anti-HCV, Persons who inject drugs, 2021

**144**
Reported acute HBV infections, 2021

**561**
Reported acute HCV infections, 2021

**5,186**
HBV-related deaths, 2020

22.0
Deaths per 100,000, 2020

**3,560**
HCV-related deaths, 2020

15.1
Deaths per 100,000, 2020

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Data from Taiwan Causes of Deaths Registry with the attributable fraction derived from the prevalence of HBV among liver cancer patients based on data from the National Cancer Registry.

Data from Taiwan Causes of Deaths Registry with the attributable fraction derived from the prevalence of HCV among liver cancer patients based on data from the National Cancer Registry.

Note: More than 90% of cases of end-stage liver diseases are related to HBV and HCV infection (https://pophealthmetrics.biomedcentral.com/articles/10.1186/s12963-021-00269-w).
## Progress Towards 2020 WHO Elimination Goals

### Prevention of New Infections and Mortality

<table>
<thead>
<tr>
<th>Disease</th>
<th>Percentage Change in New Infections, 2015-2020</th>
<th>WHO 2020 Target</th>
<th>Percentage Change in Deaths, 2015-2020</th>
<th>WHO 2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBV</td>
<td>-14%</td>
<td>-30%</td>
<td>-8%</td>
<td>-10%</td>
</tr>
<tr>
<td>HCV</td>
<td>177%*</td>
<td>-30%</td>
<td>-22%</td>
<td>-10%</td>
</tr>
</tbody>
</table>

Prevalence of HBsAg, children < 5 years (%), 2019: 0.16%

*Modifications of case definition for acute HCV occurred in March 2010, June 2012, March 2014, and February 2021. In addition, DAAs began to reimbursed in 2017 and promotion of HCV testing has been substantially increased since 2017 as well. Thus, the increasing trend of acute HCV case is likely due to increases in detection rather than true increases in infection.

## Access to Recommended Vaccination, Testing and Treatment

- **Hepatitis B vaccination coverage for newborns, 2020**: 92%
  - WHO 2020 Target 50%
  - *The first national universal HBV vaccination program was introduced on July 1, 1984*

- **HepB 3 dose vaccine coverage for infants (%), 2018**: 98%
  - WHO 2020 Target 90%
64% Proportion of persons living with HBV diagnosed (%), 2016

28% Proportion of diagnosed HBV persons receiving appropriate treatment (%), 2016

200 Number of sterile needles and syringes provided per persons who injects drugs per year, 2020

Number of tested for HBsAg, 2018-2021
Data from HPA; An expanded nation-wide screening program for adults aged 45-79 yrs was launched on 2020/9/28.

Number of new treatments for HBV, 2018-2021
48% Proportion of persons living with HCV diagnosed, 2020

80% Proportion of diagnosed persons who have been cured, 2020

131,612 Cumulative number of persons treated for HCV with DAAs, 2017-2021
POLICY ENVIRONMENT FOR THE ELIMINATION OF HEPATITIS

ACHIEVEMENT

Routine official reports to monitor HBV and HCV. HBV and HCV related deaths are derived routinely by multiplying liver-disease related deaths from the Taiwan Causes of Deaths Registry with the attributable fraction from the prevalence of HBV or HCV among liver cancer patients based on cancer registry.

In 2003, the National Health Insurance Administration (NHIA) initiated a pilot program entitled ‘Strengthening of treatment for chronic hepatitis B and C under the National Health Insurance’. The program tries to ensure that all cases of hepatitis B (and hepatitis C) are registered, so that individuals affected may benefit from appropriate diagnosis, monitoring and treatment.

To better manage Virus Hepatitis, the Ministry of Health and Welfare launched its firs 4 year National Virus Hepatitis Management Policy in 2013, and launched the 2nd one in 2017, and 3rd in 2021.

The prevalence was monitored routinely based on data from an expanded nationwide screening program for adults aged 45-79 yrs which is launched since 2020/9/28 by HPA. The government launched the National HCV Elimination Policy in 2018.

Achievements

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The Taiwan National Hepatitis C Program Office (TWNHCP), MOHW established a National Hepatitis C Elimination Progress Monitoring Information Network (TWNHCP-MIN) by connecting all available databases held by the government including the Health Promotion Administration (HPA) screening data, National Health Insurance Administration claims data (diagnosis and treatment), and other datasets pertaining to special populations including persons living with HIV, persons on OST, patients with end stage renal disease, etc. TWNHCP prepares the Progress Report of Hepatitis C Elimination every month to provide estimates on screening coverage, linkage-to-care, treatment, etc. for identifying elimination gaps (4). Moreover, a multicentered hospital based registry was established for patients living with HCV who applied for the National Health Insurance-reimbursed DAA.

INNOVATIONS

Estimates of HBV and/or HCV economic burden. Studies have been conducted analyzing the cost-effectiveness of HBV treatment. The economic burden of HCV and benefit resulted from DAA treatment were analyzed and reported in the National HCV Elimination Policy 2018-2025.

Monitoring of HBV and HCV diagnosis and treatment. Acute HBV and HCV cases are reported to the Taiwan National Infectious Disease Statistics System.

HCV and HCV related deaths are derived routinely by multiplying liver-disease related deaths from the Taiwan Causes of Deaths Registry with the attributable fraction from the prevalence of HBV or HCV among liver cancer patients based on cancer registry.

ROADBLOCKS

Adopted

Estimates of HBV and/or HCV economic burden

Adopted

Monitoring of HBV and HCV diagnosis and treatment

Studies have been conducted analyzing the cost-effectiveness of HBV treatment. The economic burden of HCV and benefit resulted from DAA treatment were analyzed and reported in the National HCV Elimination Policy 2018-2025.
INNOVATIONS
The economic burden of HCV and benefit resulted from DAA treatment were evaluated and projected

PREVENTION OF MOTHER TO CHILDREN TRANSMISSION

Policy for hepatitis B vaccination of newborns

Adopted

HBV vaccination expanded to all newborns in 1986

Recommendations for:

HBV testing of pregnant women

Adopted

HCV testing of pregnant women

Not Adopted

ACHIEVEMENTS
Chinese Taipei was the first place to launch universal hepatitis B screening of pregnant women and universal vaccination. The seroprevalence of HBsAg decreased from 9.8 to 0.5% in people ≤30 years of age in Taipei City after 30 years of mass vaccination

INNOVATIONS
Automatic reminders and notifications in hospitals used to prompt HBV and HCV screening

ACCESS AND REGISTRATION OF MEDICINES AND TESTS

Registration of originator DAAs

Adopted

Eligible for generic DAAs

Not Eligible

Government allows importation of generic products for individual use. Government program procures originator drugs.

Registration of generic DAAs

Partially Adopted

Licensed point-of-care PCR testing to detect HBV and HCV

Not Adopted
TESTING TO DIAGNOSE HBV AND HCV INFECTION

Testing recommendations for:

- **HBV:** Risk-based ¹  
  - Partially Adopted
- **HCV:** Risk-based ¹  
  - Adopted
- **HBV:** Universal ²¹  
  - Adopted
- **HCV:** Universal ²¹  
  - Adopted

No patient co-pays for HBsAg and anti-HCV testing ¹⁹,²²

ACHIEVEMENTS

Annual HBsAg and anti-HCV screening are provided to end-stage renal disease patients and HIV patients. This micro-elimination program has screened more than 95% patients for HBV and HCV. More than 80% of patients have been treated ²³

INNOVATIONS

A call-back system was implemented at Kaohsiung Municipal Ta-Tung Hospital where well-trained nursing coordinators used a checklist via phone, mail, texts, email, or app to make liver clinic appointments for patients that were identified in EMR records as being anti-HCV+ since 2010 but had not yet received HCV RNA testing ²³

Reflex HCV testing approved since 2021. One study from Kaohsiung Medical University Hospital found a 4-fold improvement in the HCV RNA diagnostic rate after implementing HCV reflex testing ²⁴

Real-time automatic appointment system led to a 3-fold improvement in the treatment rate at Kaohsiung Medical University Hospital ²⁴

Integrated screening for HBV, HCV, and liver function tests typically conducted
### ACCESS TO HBV AND HCV TREATMENT

<table>
<thead>
<tr>
<th></th>
<th>Developed</th>
<th>Adopted</th>
<th>Not Adopted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HBV:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National treatment guidelines</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified care: Simplified treatment and monitoring algorithm for primary care providers</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified care: No patient treatment co-pays (public sector)</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HCV:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National treatment guidelines</td>
<td>26, 27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified care algorithm: Less than 2 clinic visits during treatment</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified care algorithm: Non-specialists can prescribe treatment</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplified care algorithm: No patient treatment co-pays</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No fibrosis restrictions</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No sobriety restrictions</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No genotyping</td>
<td>19</td>
<td></td>
<td>Not Adopted</td>
</tr>
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</table>

For entacavir or tenofovir, treatment is only covered up to 36 months. Another 36 months of treatment is allowed in case there is a flare after discontinuation of the antiviral treatment. However, for cirrhotic patients with active HBV infection, hepatitis B antivirals can be given lifelong.

Reimbursement of DAAs since 2017

Removed in 2019

### ACHIEVEMENTS

- More than 200,000 patients have been treated for HCV
- Reimbursement of HBV antivirals has been in place since 2003
- National committee of experts set goal for HCV elimination by 2025

### ROADBLOCKS

- HBV treatment criteria remains complicated. Expert committee meets each year to reevaluate
- Additional training for HCV screening and treatment among non-specialists is needed
- Reimbursement for HBV treatment is more restrictive than recommended by AASLD and EASL
## HEALTH EQUITY AND ADDRESSING DISPARITIES

<table>
<thead>
<tr>
<th>Policy/Program</th>
<th>Status</th>
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<tbody>
<tr>
<td>National strategy addresses populations most affected</td>
<td>Adopted</td>
</tr>
<tr>
<td>National anti-discrimination laws against people living with hepatitis B and/or C</td>
<td>Adopted</td>
</tr>
<tr>
<td>National policy for adult hepatitis B vaccination</td>
<td>Adopted</td>
</tr>
<tr>
<td>National policy for:</td>
<td></td>
</tr>
<tr>
<td>Harm reduction for persons who inject drugs (PWID)</td>
<td>Developed</td>
</tr>
<tr>
<td>Syringe exchange in federal prisons</td>
<td>Not Adopted</td>
</tr>
<tr>
<td>Number of needles/syringes per PWID per year, 2020</td>
<td>200</td>
</tr>
<tr>
<td>Number of opioid substitution therapy recipients per 100 PWID</td>
<td>33.9</td>
</tr>
<tr>
<td>Decriminalization of possession of syringes &amp; paraphernalia</td>
<td>Adopted</td>
</tr>
<tr>
<td>Decriminalization of drug use</td>
<td>Not Adopted</td>
</tr>
<tr>
<td>Decriminalization of hepatitis infection</td>
<td>Adopted</td>
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### INNOVATIONS

*Efforts are underway to train non-GI and hepatology specialists in HCV treatment, including outreach to professional societies for OB-GYNs and primary care doctors.*

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### HEALTH EQUITY AND ADDRESSING DISPARITIES

- **National strategy addresses populations most affected**: Adopted
- **National anti-discrimination laws against people living with hepatitis B and/or C**: Adopted
- **National policy for adult hepatitis B vaccination**: Adopted
- **National policy for**: Developed
  - Harm reduction for persons who inject drugs (PWID)
- **Syringe exchange in federal prisons**: Not Adopted
- **Number of needles/syringes per PWID per year, 2020**: 200
- **Number of opioid substitution therapy recipients per 100 PWID**: 33.9
- **Decriminalization of possession of syringes & paraphernalia**: Adopted
- **Decriminalization of drug use**: Not Adopted
- **Decriminalization of hepatitis infection**: Adopted

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### INNOVATIONS

- **Injecting drugs is forbidden in prisons.**
- **WHO 2020 Target 200**
- **It is lawful to possess syringes for personal use. Prescription of syringes from a doctor is not needed and it is easy to obtain syringes from pharmacy. However, drug paraphernalia possession is illegal.**
Chinese Taipei has one of the strongest HBV vaccination programs in the world. The seroprevalence of HBsAg decreased from 9.8 to 0.5% in people ≤30 years of age in Taipei City after 30 years of mass vaccination. Syringe exchange programs are widely available to persons who inject drugs. Many NGOs, members of the World Hepatitis Alliance, are actively working on community education and sensitization efforts.

Micro-elimination programs have been initiated for persons living in hyper-endemic areas, including the southwest coast, that involves an outreach strategy with door-to-door screening and mobile, point-of-care treatment. Community-based care and treatment permitted in hyper-endemic areas. Patients are not required here to go to hospital for HCV treatment dispensing.

ACHIEVEMENTS

INNOVATIONS

Special prison-based chronic hepatitis C clinics were established at Yunlin Prison, Penghu Prison, and Prisons in Chanhua County, serving as models of how to implement universal screening and link patients to treatment.

The ERASE-C campaign in 19 hemodialysis centers demonstrated the feasibility of a micro-elimination program among hemodialysis patients by implementing outreach strategies, mass screenings, and on-site group treatment. Among viremic patients identified, over 80% received HCV treatment. Eventually, the HCV viremic rate was reduced by over 88% from baseline. HCV micro-elimination was achieved in over 90% of the hemodialysis centers.

10 micro-elimination sites have been set up for HBV and HCV screening among persons living with HIV. At the National Taiwan University Hospital, the HCV viremic prevalence of persons living with HIV was reduced by over 66% and HCV incidence reduced by more than 50% from 2018 to 2021 with the scale-up of access to HCV testing and treatment.

Over 80% of PWID on opioid agonist therapy have been cured of HCV through an integrated, on-site diagnosis care model.

The government has set up a working group for viral hepatitis, and NGOs and all the liver associations.

FINANCING

Public budget line for HBV and HCV testing and treatment

INNOVATIONS

A special budget for DAA treatment was arranged for nearly 120,000 patients in 2017-2020, corresponding to 30% treatment coverage with 2 billion NTD in 2017, 4.8 billion NTD in 2018, 5.6 billion NTD in 2019, and 8.4 billion in 2020.
NEXT STEPS TOWARD ELIMINATION

- Continue to raise community awareness on HBV and HCV and promote screening to identify the remaining persons undiagnosed
- Confirm commitment of all stakeholders to hepatitis elimination
- Educate non-specialists on HCV screening and treatment, including training on simplification of treatment algorithm for easy-to-treat patients
- Prioritize expanding access to testing and treatment for key populations, including persons on hemodialysis, HIV patients, persons who inject drugs, persons who are incarcerated, and persons on opioid substitution therapy. In addition, patients with comorbidity such as diabetes mellitus, early stage chronic kidney disease, and pre-end stage renal disease, etc. are included.

SOURCES

12. Data from Taiwan National Health Insurance Administration.
32. Guan-Jhou C et al. (2022). Hepatitis C microelimination among people living with HIV in Taiwan (Forthcoming publication).

WORKING TOGETHER, WE WILL ACHIEVE ELIMINATION.

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