

POLICY BRIEF

The case for investing in hepatitis B and C treatment in China

**as part of a national comprehensive response to
viral hepatitis prevention, treatment, monitoring
and case management**

**WHO China in collaboration with National CDC
2015**

Summary

- Large-scale access to treatment of hepatitis B and C is required to significantly reduce China's burden of morbidity, cancer and death due to hepatitis in the next 20-50 years. Currently, less than 2% of people who need treatment are receiving it
- A comprehensive public health programme for hepatitis B with infant vaccination and PMTCT, active case-finding and treatment is likely to be cost-saving and would avert 2.1 million deaths by 2030. For each RMB 1 invested, the return in this investment is RMB 1.3.
- New direct-acting antiviral (DAA) medicines cure hepatitis C infection. China can potentially eliminate the burden of hepatitis C.
- Addressing hepatitis using the public health approach is feasible, achievable and affordable. The current priorities for China are:
 - reduction of prices of medicines for hepatitis B and C treatment using the public health approach
 - to establish a focal unit responsible for coordination and management of the national comprehensive national response to hepatitis, including prevention, treatment, case-finding and strategic information
 - accelerate access to treatment through the current mechanism of financing and ongoing health reforms to ensure universal affordable health care for hepatitis
 - pilot implementation of the comprehensive approach in selected sites

1.1 Hepatitis B and C are major public health threats in China

There are an estimated 90 million people living with chronic hepatitis B and 10 million people living with chronic hepatitis C in China. China's burden of chronic hepatitis B and C infections are among the highest in the world, accounting for 25% of the global burden of hepatitis B and 7% of those with hepatitis C.

Over half (51%) of the global burden of hepatocellular carcinoma (liver cancer) mortality occurs in China, equating to approximately 395 000 new cases and 383 000 deaths annually – most (90%) due to hepatitis B and 10% from hepatitis C.

Urgent antiviral treatment in people with advanced liver disease to prevent cancer and death are needed in an estimated 7 million people chronically infected with hepatitis B and 2.5 million people infected with chronic hepatitis C. Most are not aware of their infection.

90 million people living with chronic hepatitis B

Almost 11 million people at risk of advanced liver disease and cancer due to hep B (7 million) and C (2.5 million)

If urgent public health action is not taken, it is projected there will be 9 million deaths in people living with chronic hepatitis B and C between 2015 and 2030.

Adopting a standardized package (SP) of antiviral therapy, monitoring and follow-up costs results in dramatically reduced treatment costs for hepatitis. Lower antiviral drug prices further improve the cost of the package. (fig.1).

1.2 Treatment is currently limited, mostly suboptimal, and unaffordable (fig 1)

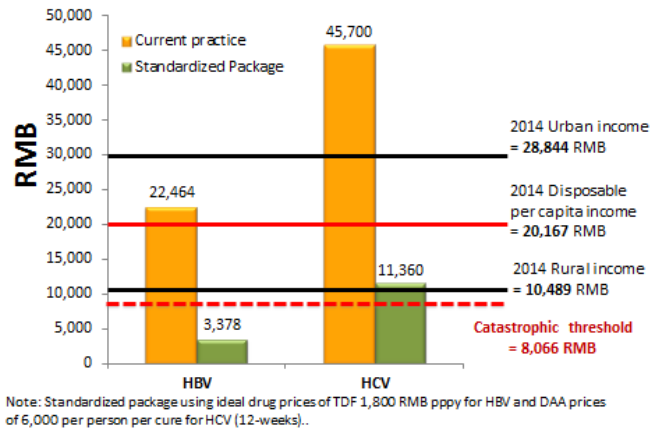
An estimated 3.5 million people are currently receiving some form of hepatitis B therapy at an average annual cost of **RMB 22 500 per person-year**. Most (70%) are receiving suboptimal or ineffective antiviral drugs with a high risk of drug resistance.

Approximately 100 000 people receive interferon-based therapy annually for hepatitis C. Current therapy is lengthy (12 months), poorly tolerated due to side effects, requires cold chain and only available in injectable form. At **RMB 45 700 per person-year**, it is unaffordable to both urban and rural households.

Most patients pay for hepatitis treatment out-of-pocket since health insurance often does not cover outpatient treatment and monitoring costs. The costs associated with hepatitis care and treatment are currently several

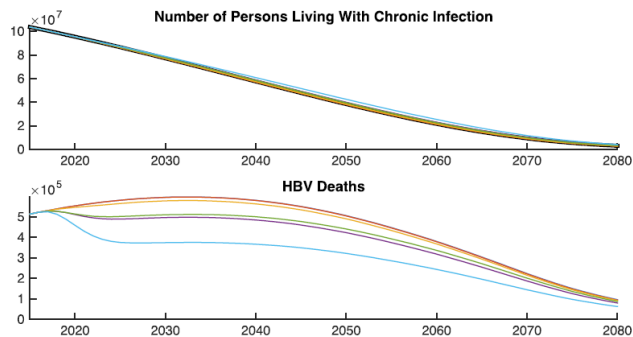
fold higher than the catastrophic expense threshold households, especially for rural families.

Fig.1 Reduction in costs of treatment and care using a standardized package with reduce prices of drugs



2. Hepatitis B

2.1 High burden of chronic infections with increasing deaths due to hepatitis B for decades if no scale up of treatment (fig 2)

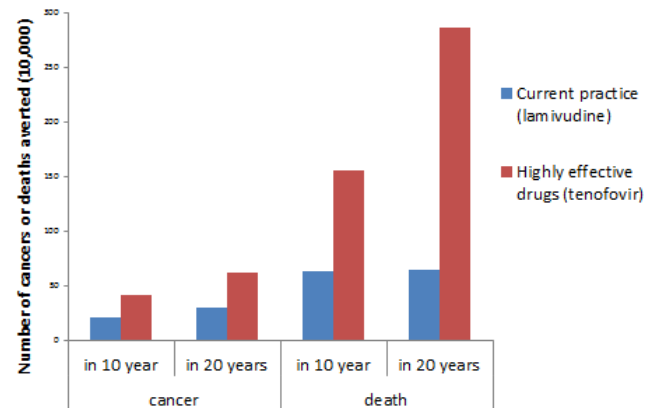


Given recent success in reducing new cases of chronic hepatitis B carriage through effective vaccination among infants and at birth, most prevalent hepatitis B cases in China are adults, who acquired the infection through mother to child or early childhood exposure, prior to the scale-up of vaccination. This infected adult cohort will age over time and so complications and subsequent death due to chronic hepatitis B will increase for the next 40 - 50 years.

To reduce mortality, active case finding (identifying individuals living with chronic hepatitis B) and effective treatment for all who require it will avert a large proportion of these deaths.

2.2 Use of optimal highly effective medicines saves more lives: tenofovir prevents 2-4 times more cancers and deaths (fig 3)

Fig 3: Cancers and deaths averted using optimal medicines

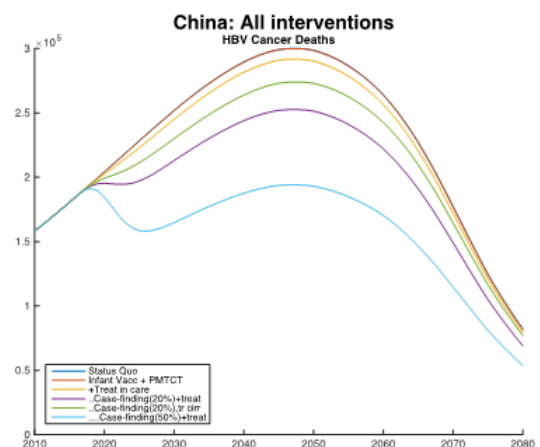


Treating 7 million people who urgently need treatment with optimal antivirals and standardized package of care services can prevent 406,000 liver cancers and 2.1 million deaths by 2030.

These health gains are amplified over time since optimal treatment prevents progression of liver disease, cirrhosis and cancer.

2.3 Trajectory of epidemic and burden can be changed (fig 4)

Fig 4: Projected burden of hepatitis B-related cancer deaths 2010-2080, China



Scenario modelling of burden of hepatitis B-related cancer deaths show (fig 4):

- Limited impact on cancer deaths over the next 40 years if the strategy is “prevention only (infant vaccination and prevention of mother-to-child transmission (PMTCT)” or “prevention and treat only those currently in care”.
- Dramatically reduced cancer deaths if active case finding and universal access to hepatitis B treatment for all who require it

These deaths can be averted through scale up from treating those who urgently require treatment to those with less urgent needs over time.

2.4 Providing universal access to hepatitis B treatment for all who need it will save money (fig 5)

Access to effective antiviral treatment for hepatitis B is currently very limited. The economic consequences for society through loss of productivity and income is large and affects families, communities with implications for society and the country at large.

A person who currently needs treatment but does not get care because it is unaffordable will result in direct costs to this individual of more than RMB 71 937, 147 489 and 227 231 in 5, 10 and 20 years respectively, due to progression of liver disease and deterioration in health.

If the individual receives timely treatment when s/he needs it – using a standardized package of services and highly effective medicines such as tenofovir or entecavir – the saving in averted direct costs is RMB 50 118, 105 160 and 160 896 over 5, 10 and 20 years respectively.

2.5 Treatment scale-up for hepatitis B using the public health approach does not substantially increase direct government budgets

Access to treatment can be gradually and economically scaled-up using the public health approach if it includes:

- a standardized package of treatment, monitoring and follow-up,
- harmonized and simplified national guidelines,
- reduced prices of highly effective medicines recommended by WHO such as tenofovir and entecavir,
- decentralized access to diagnosis, treatment, monitoring and case management to county level, and

- sustained domestic financing through the ongoing health reforms.

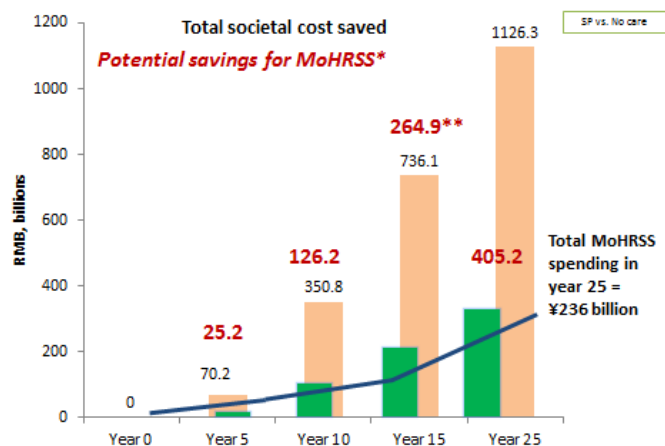
A planned expansion of hepatitis B care and treatment access using the public health approach will cost the Ministry of Human Resource and Social Service (MOHRSS) budget RMB 2 billion (0.3%) annually for each additional 1.4 million patients, with a 70% reimbursement through health insurance.

This cost is significantly less than if the same number of patients are financed by the MOHRSS using current practices - RMB 16 billion (1.8% of the MOHRSS budget).

Treating 7 million people who need therapy as a priority with a 70% reimbursement through health insurance – will save MOHRSS substantial direct costs over time as disease consequences of infection will not be present and hospitalizations and associated care and treatment costs will be lower. Overall it is projected that RMB 740 billion in medical costs will be saved. Government would potentially save 220 billion in health costs, and the basic insurance schemes would save RMB 280 billion.

If 7 million priority hepatitis B patients are treated (with 70% reimbursement through health insurance), for every RMB 1 invested, MOHRSS will receive RMB 1.6 in return (in reduced direct costs for care of patients with advanced disease) over a 15-year period (fig 5)

Fig 5: Potential savings for MOHRSS treating 7 million people in 5 years, with a 70% reimbursement rate



*Assuming the 2013 health security expenditure proportions (35.98%) from the total health expenditure, and using the ideal TDF price at 1 800 PPPY; assumed static population. SP: standard package of treatment, monitoring and follow up

2.6 Addition of case finding as comprehensive response is likely to save costs

A comprehensive response with infant vaccination and PMTCT interventions to further reduce perinatal transmission should continue. However, providing treatment for those currently presenting for care will not have large impact on the public health burden of hepatitis B since most undiagnosed and those who become diagnosed are tested too late to benefit fully from treatment.

Thus, active case-finding is needed. Active HBV case-finding and treatment is cost-saving and would avert 2.1 million deaths by 2030. Active case finding will provide a positive return on investment.

2.7 Continued investment in prevention is needed to further reduce new infections

The infant hepatitis B vaccination programme and prevention of mother-to-child transmission among infants born to mothers who are chronically infected with hepatitis B are fundamental strategies to reduce early childhood chronic infection. However, there are still approximately 50 000 new infections among infants every year. Additional interventions to further decrease transmission to infants and young children are needed to further reduce early childhood infections.

Investment in other prevention strategies through safe blood, harm reduction programmes for people who inject drugs and safe sex should continue.

Prevention of new infections through vaccination of adults at risk including health care providers and populations who are at high risk of hepatitis B transmission through the sexual route will be important to accelerate ending the hepatitis B epidemic in at-risk populations.

Reducing the burden of hepatitis B: recommendations

Addressing hepatitis B using the public health approach is feasible, achievable and affordable under the ongoing health reforms.

Implementation will require:

1. To establish a focal unit responsible for coordination and management of the national comprehensive national response to hepatitis, including prevention, treatment, case-finding and strategic information
2. Reduced prices for optimal highly effective drugs (tenofovir and entecavir) and implementation of a standardized package of treatment, clinical monitoring and follow-up in outpatient and hospital settings.
 - Prices of tenofovir should be reduced to under RMB 1,800 per person per year (the price of tenofovir in HIV programmes). There is potential to drive this cost down further as tenofovir comes off patent in 2017.
 - Consider options of including hepatitis B treatment under the special disease management programme or provide secondary insurance (commercial medical insurance) to avoid catastrophic health expenses, especially for rural households.
3. Pilot the implementation of a comprehensive public health approach to hepatitis B, including diagnosis, case-finding, linkage to health services, treatment and case management.
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Using a standardized package of services including highly effective drugs at reduced prices can:

- Reduce current costs of RMB 22 500 to ~3 400 per person- year, based on tenofovir prices of RMB 1 800 per person-year
- Treat 24 million people for the same expenditure (RMB 80 Billion) as the current practice of care and treatment only covers 3.5 million patients

3. Hepatitis C

3.1 New oral medicines cure hepatitis C infection, but complex and lengthy registration processes impedes access to medicines

New direct acting antiviral (DAA) medicines are now available which can cure hepatitis C infection in over 90% of patients. Treatment regimens using DAA oral drugs are short (12 weeks) and are well tolerated.

Compared to current pegylated-interferon therapy which are poorly tolerated and require 48 weeks injections, the new DAA drugs are substantially (> 25%) more effective in preventing advanced liver disease, cancers and related deaths and are much better tolerated.

Several new DAA drugs are undergoing registration trials in China – however, these drugs will not be available until after 2018 because of regulatory procedures.

3.2 High burden of chronic infections with increasing deaths due to hepatitis C can be reduced by ensuring access to treatment (fig 6)

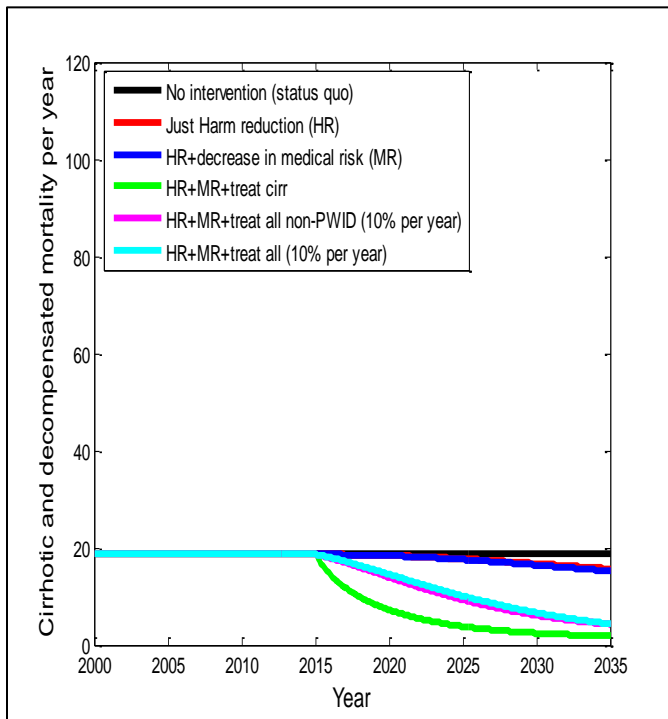


Fig. 6: Scenario modelling on impact of interventions on hepatitis C-related deaths till 2035

China has a harm reduction programme for people who inject drugs, established in 2004. Prevention of new hepatitis C infections through safe blood and safe

injections within medical setting has further reduced transmission.

There will be increased death due to hepatitis C related liver disease in the coming decades. Treatment of people who have already developed advanced liver disease including cirrhosis will reduce these deaths.

If new DAA treatments are provided to all infected persons, the hepatitis C epidemic can be eradicated. However, at current pricing, this is too costly.

3.3 Providing DAA-based treatment will save on medical costs later (fig 7)

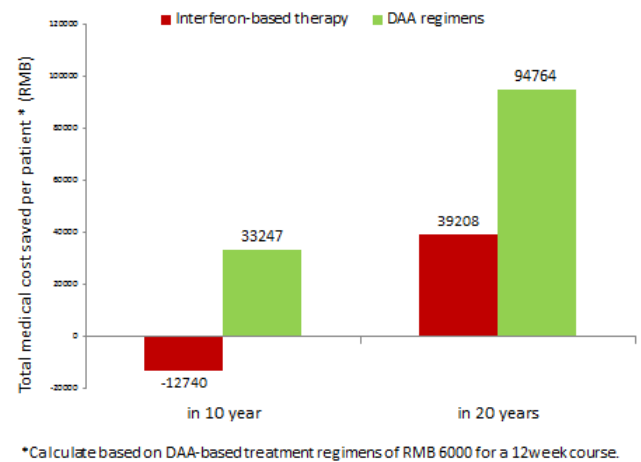


Fig.7: Total medical costs saved per person in 10 and 20 years

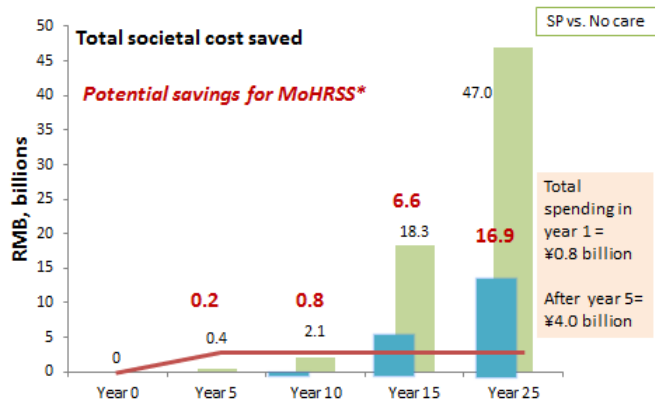
Currently, approximately 100 000 people receive HCV treatment every year. An estimated 2.5 million people require treatment urgently because of advanced liver disease with a higher risk of death.

Providing highly effective treatment will save on medical costs over time. On average, more than RMB 95 000 per person can be saved in the 20 years following cure.

Using highly effective DAA drugs at reduced prices (such as RMB 6 000 for a 12 weeks treatment course) and a standardized package of monitoring and follow up, the costs per cure can be reduced from the current RMB 45 700 to 11 400 per person.

At RMB 11 400 per cure using highly effective DAA drugs and standardized package of services, more than 400 000 people can be treated at current levels of expenditure (RMB 4.6 Billion) compared with only 100 000 accessing interferon-based therapy today.

3.4 Treatment scale-up for hepatitis C saves costs, for households and government (fig 8)



*Assuming the 2013 health security expenditure proportions (35.98%) from the total health expenditure, and using DAA prices for 6 000 RMB; assumed static population

Fig.8: Potential savings of MOHRSS covering 500 000 people with a 70% reimbursement rate

Since DAA-based therapy cures hepatitis C infection, the annual investment per year could be as little as RMB 800 000 annually to treat 100 000 patients using the public health approach to treatment.

If MOHRSS covers 500 000 patients over the next five years using optimal (DAA) drugs and standardized care, approximately RMB 47 billion will be saved by households in 20 years. Public finance will potentially save RMB 14 billion and basic insurance schemes could save RMB 18 billion.

At 70% reimbursement rate, MOHRSS will receive a return of RMB 3.3 for every RMB 1 invested. Even if the reimbursement rate is increased to 95%, the returns are RMB 3.1.

Addressing the hepatitis C epidemic:

Recommendations

Treatment for hepatitis C using new oral direct acting antiviral medicines is more cost effective than current practices and feasible to implement in large scale.

The priorities are:

1. To have access to new DAA medicines in the country and negotiate for lower prices.
 - The prices of DAA regimens should be negotiated to at least equivalent to India prices (about RMB 6 000 per person for a 12-week course)
 - Using a standardized package of services helps to rationalize the costs of care
2. To addressing the burden of hepatitis, a focal unit responsible for coordination and management of the national comprehensive national response to hepatitis, including prevention, treatment, case-finding and strategic information should be considered.
3. Pilot the implementation of a comprehensive public health approach to hepatitis C, including diagnosis, case-finding, linkage to health services, treatment and case management – using new oral DAA-based regimens.
4. Financing hepatitis C treatment and care should include contributions from basic insurance schemes to cover outpatient care, especially for rural households.

New DAA-based treatment cures hepatitis C infection.

Investing in treatment means that China can eventually eliminate the epidemic.