

A Coalition Advancing Progress Toward Global Hepatitis Elimination: Achievements, Challenges and Opportunities

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Viral hepatitis is a large health problem globally now targeted for elimination. The two major forms of viral hepatitis, hepatitis B virus (HBV) and hepatitis C virus (HCV) cause over a million deaths per year from cirrhosis and liver cancer¹. At least 325 million persons are living with HBV (257 million, 3.5% prevalence) and HCV (71 million, 1% prevalence) globally. Asian Pacific countries bear 45% of the global HBV burden². China alone has a population of 80-110 million HBV infected persons, a quarter to a third of the global burden of HBV disease. The HBV infection prevalence, of ~7.0% in China are among the highest in the world^{2,3}.

Interventions are available to prevent, test and treat HBV and HCV infection. Hepatitis B vaccination of infants beginning at birth prevents over 95% of chronic HBV infections. Transmission of HBV and HCV, both blood-borne viruses, is effectively prevented by safe injection and other infection control procedures in health care and in the community, including among persons who inject drugs (PWID). HBV and HCV diagnosis and treatment prevents pre-mature mortality. In 2014, the first all-oral curative therapies for HCV were approved greatly improving patient outcomes. Indeed, clinical experience has confirmed 8-12-week regimens of HCV medications cure over 95% of HCV infected persons⁴.

In 2015, reacting with concern to the hepatitis disease burden at a time of effective interventions, the United Nations called on the world to “combat hepatitis”⁴. In 2016, the WHO set goals for viral hepatitis elimination defined as a 90% decline in HBV and HCV incidence and a 65% reduction in HBV and HCV mortality by 2030⁵. The achievement of HBV and HCV elimination goals can avert over 26 million deaths, including over four million deaths from HBV and HCV infection by 2030⁶.

To reach these HBV and HCV elimination targets, countries will need to scale up access to HepB vaccination and other interventions that prevent transmission, and testing and treatment to prevent mortality (Table 1). However, in many countries, access to HepB vaccination, and HBV and HCV care and treatment are poor. Recognising the challenges in implementing multiple interventions, advisory bodies recommended the development of a global coalition to build capacity and support for hepatitis elimination efforts worldwide^{7,8}. In response, the Task Force for Global Health launched the Coalition for Global Hepatitis Elimination. This article describes the Hong Kong origins of the Coalition, the Coalition capacity building for hepatitis elimination aided by partnerships in Hong Kong, and Guangzhou, and opportunities for sharing strategies from successful hepatitis prevention

programmes while learning how to overcome barriers to hepatitis elimination in China, Asia Pacific and globally.

COALITION FOR GLOBAL HEPATITIS ELIMINATION: ORIGINS IN HONG KONG

In 2011, ZeShan Foundation, a Hong Kong-based family foundation, launched a novel public-private partnership to aid mainland China in the prevention of mother-to-child transmission (PMTCT) of HBV. With the technical assistance of the US CDC, ZeShan Foundation donated resources to address the financial shortfalls threatening WHO assistance to the national HBV PMTCT programme in mainland China. The WHO programme was successfully completed with a formal evaluation confirming that the HepB vaccination programme achieved 85% HBV immunity among vaccinated children, and a 90% decrease in HBsAg prevalence (0.96%)⁹. With the mainland China programme as a model, ZeShan Foundation, in partnership with US CDC extended financial support for WHO to assist HBV PMTCT programmes in neighbouring Asian countries (10). With the experience of this successful public-private partnership, the CDC Foundation created a Viral Hepatitis Action Coalition to help the US CDC make meaningful advances in the prevention, screening, and treatment of viral hepatitis (<https://www.cdcfoundation.org/vhac#>). The Viral Hepatitis Action Coalition (VHAC) charter expired in 2016, CDC subsequently provided in-kind support for the Task Force for Global Health, to engage partners in the development of a coalition modelled after coalitions for other global disease elimination initiatives managed by the Task Force. VHAC partners moved to the Task Force for Global Health (TFGH) to continue support of global hepatitis elimination through the activities of the Coalition. ZeShan Foundation continues their support for eliminating hepatitis in developing countries.

HOW THE COALITION ASSISTS GLOBAL HEPATITIS ELIMINATION

Launched in July 2019, the mission of the Coalition is to strengthen the capacity of national and sub-national hepatitis elimination programmes through funding, advocacy, technical assistance, knowledge generation and dissemination among partners united in a community of practice. To advance progress toward hepatitis elimination, Coalition provides services in five strategic axes.



Table 1. WHO interim and final targets for implementation of interventions to achieve hepatitis elimination (Excerpted from Global Hepatitis Report 2017. Geneva: World Health Organization; 2017. www.who.int accessed 8/03/2020)

Target areas	Baseline 2015	2020 target	2030 target
Service coverage			
Prevention			
Three-dose HBV for infants (coverage %)	84	90	90
Prevention of mother-to-child transmission of HBV: hepatitis B birth-dose vaccination or other approaches (coverage %)	39	50	90
Blood and injection safety			
Blood safety: donations screened with quality assurance (coverage %)	97	95	100
Injection safety: use of engineered devices ^c (coverage %)	5	50	90
Harm reduction (sterile syringe/needle set distributed per person per year for people who inject drugs [PWID])	20	200	300
Treatment			
Diagnosis of HBV and HCV (coverage %)	9-20	30	90
Treatment of HBV and HCV	7%-8%	5 million (HBV) and 3 million (HCV)	80% eligible treated
Impact leading to elimination			
Incidence of chronic HBV and HCV infections	6-10 million	30% reduction	90% reduction
Mortality from chronic HBV and HCV infections	1.34 million	10% reduction	65% reduction

^aHBV: hepatitis B virus.

^bHCV: hepatitis C virus.

^cAlthough the service coverage target is about output (adoption of reuse prevention injection devices), the C.5 indicator focuses on outcome (provision of safe injections).

Convene a Community of Practice

The Coalition's community of practice for hepatitis elimination links partners with different financial resources, technical expertise and leadership responsibilities for hepatitis prevention, care and treatment. In the first year of operation, over 100 partners at the global, national and sub-national level are sharing financial resources, implementation tools and lessons learned on self-managed programme pages at www.globalhep.org.

Capacity Building Partnerships

No one individual, organisation or government can eliminate hepatitis. Coalition partners include government agencies, industry, professional associations, philanthropic and other civil society organisations. With the information shared by programmes, the Coalition develops collaboration among partners to address the challenges faced by specific programmes initiatives.

Data Dashboards for Over 190 Countries

For 191 countries, the Coalition compiles data from strategic information partners to monitor trends in hepatitis burden, progress toward elimination goals and access to interventions (<https://www.globalhep.org/country-profiles>). Partners in the strategic information collaborative include WHO, the European CDC, CHAI, the University of Washington Global Burden of Disease project, Medicine Patent Pool, authors of systematic reviews and others. All information is linked to primary data sources, and the data files and graphics are freely downloadable. Together with the lessons learned by programmes, the Coalition provides a unique resource to check on progress toward elimination, learn of hepatitis elimination activities and promote collaborations across programmes¹¹.

Hepatitis Elimination Scorecards

Scorecards reveal strengths and gaps in hepatitis elimination programmes (Fig. 1, Fig. 2). In China, hepatitis B prevention is a national priority with HepB vaccination coverage among infants exceeding 95%. Globally, many countries have yet to develop hepatitis elimination plans, or set targets for HepB vaccination, and other prevention measures. Indeed, China and most other countries have not reduced HBV and HCV mortality by 10%, the WHO 2020 interim target (Fig. 1), revealing the need for improvements in HBV and HCV screening and linkage to care^{1, 12-16}.

Build a Trusted Dynamic Evidence Base for Hepatitis Elimination

To date, the Coalition has compiled over 500 resources to guide programme planning with links to normative guidance, systematic reviews, and reports from WHO and other authoritative organisations. For example, the evidence base includes a synthesis of immunisation programme evaluations to guide the implementation of HepB birth dose vaccination. To guide national planning for hepatitis elimination, the Coalition assembled and reviewed almost 100 national and sub-national hepatitis action plans. With a checklist prepared with WHO, the Coalition highlights essential components of a hepatitis prevention plan including elimination targets, financing, implementation strategies, and partnerships to reach key populations (<https://www.globalhep.org/evidence-base>). The evidence base is dynamic with recent reports on the progress of the COVID-19 pandemic, the interaction between viral hepatitis and SARS-CoV-2 infection and recommendations for the management of patients with chronic liver disease during the COVID-19 pandemic.



Interim Report: Progress towards Global HBV and HCV Elimination

WHO Hepatitis Elimination Goals

2020

2020 Interim Goals

Key targets:

- ≥10% reduction in mortality
- <1% HBsAg prevalence among children <5
- 90% Hep B 3 dose coverage
- 50% Birth dose coverage
- >200 needles/syringes per PWID

2030

2030 Goals

Key targets:

- >65% reduction in mortality
- <0.2% HBsAg prevalence among children <5
- 90% Hep B 3 dose coverage
- 90% Birth dose coverage
- >300 needles/syringes per PWID

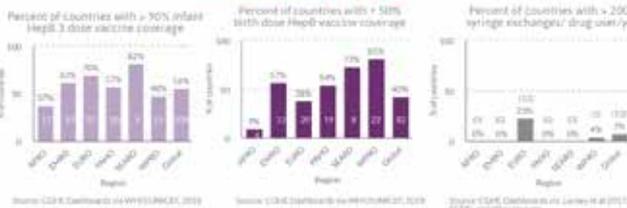
As we start the last decade to reach our shared 2030 elimination goals, let's celebrate our achievements to 2020 and commit to overcoming our remaining challenges.

Working together, we will achieve elimination.

Health Impact Targets



Service Delivery Targets



Key Policy Indicators

	National Action Plan	≥ 1 NSP program	≥ 1 OST program	Access to HBV generics	Access to HCV generics
AFRO	11% (3)	17% (8)	12% (6)	96% (44)	98% (45)
EMRO	10% (3)	23% (7)	24% (8)	53% (2)	67% (14)
EURO	32% (17)	89% (47)	87% (44)	15% (8)	34% (18)
PAHO	46% (14)	14% (5)	17% (6)	63% (22)	60% (25)
SEARO	27% (15)	55% (8)	64% (7)	91% (18)	100% (11)
WPRO	15% (4)	36% (7)	22% (6)	52% (14)	74% (20)
Global	24% (36)	41% (66)	39% (74)	54% (105)	70% (134)

Fig. 1. Interim Report: Progress towards Global HBV and HCV Elimination (Excerpted from Coalition for Global Hepatitis Elimination, with the permission from The Task Force for Global Health)

Interim Report: Progress towards HBV and HCV Elimination in China

Burden of HBV and HCV in China

111 M

People living with HBV, 2019

19 M

People living with HCV, 2019

162,085

Number of HBV-related deaths, 2019

78,041

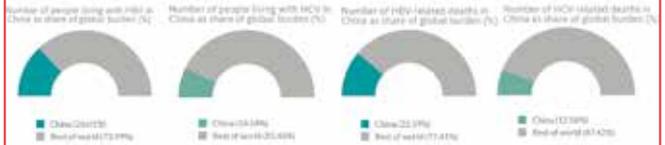
Number of HCV-related deaths, 2019

0.3% HBsAg prevalence among children <5 years, 2014

63.3% HCV prevalence among people who inject drugs (PWID)

Progress towards 2020 health impact interim-elimination targets

2020 Target	Current estimate	Meet elimination target?
<1% HBsAg prevalence among children <5 in	0.3% WHO target, meeting 1 of 2020	✓
≥10% decline in HBV-related mortality	+6.3% (-4.9%, -12.6%)	⚠
≥10% decline in HCV-related mortality	+7.0% (-0.6%, 12.1%)	⚠



Key hepatitis program indicators

Indicator	Current coverage	2020 Target	On track to reach 2020 target?
Blood safety coverage	99%	95%	✓
Health care injection safety	>99%	90%	✓
Hep B 3 dose infant vaccine coverage	99%	90%	✓
Hep B birth dose vaccine coverage	96%	50%	✓
Number of needles-syringes per PWID per year	300	200	✓
Hep B diagnosis	19%	30%	⚠
Hep B treatment	11%	NA	NA

Hep B birth dose coverage 2004-2018

Hep B 3 dose infant vaccination coverage 2004-2018

Comparison to regional and global burden

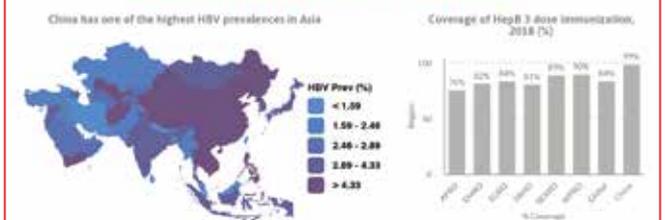


Fig. 2. Interim Report: Progress towards HBC and HCV Elimination in China (Excerpted from Coalition for Global Hepatitis Elimination, with the permission from The Task Force for Global Health)

Provide a Help Desk for Hepatitis Elimination

Guided by a Technical Advisory Board, the Coalition helps countries plan, implement and evaluate hepatitis elimination programmes. For example, the Coalition responds to inquiries regarding hepatitis B vaccination infection control and financing. The Coalition assists partners in Africa and Asia evaluate strategic information and the scale up HBV and HCV testing with linkage to care, the Coalition works with the Pan-American Health Organization to strengthen regional capacities accelerating progress toward hepatitis elimination in the Americas. To assist the dissemination of operational research, the Coalition launched *Innovations in Hepatitis Elimination* series in Clinical Liver Disease (<https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/cld.988>). To strengthen the evidence base from low/middle income countries and marginalised populations globally, the Coalition provides editorial assistance for authors with limited experience in scientific writing for peer-reviewed publications.

Identify Innovative Strategies and Technologies that Improve Hepatitis Prevention, Care and Treatment

With the input of partners in the community of practice and TAB guidance, CGHE coordinates operational research. Currently, CGHE partners are studying options of second line HCV therapies for retreatment of patients who fail initial HCV therapies in low and middle income countries where patented second line therapies are not available. Research priorities include HCV treatment as prevention strategies and HBV models of care that increase the number of persons diagnosed and treated for hepatitis B.

Support Global and Advocacy and Community Mobilisation

Through a global community of practice, the Coalition elevates the visibility of all partners increasing awareness of their work globally and in their home countries. Locally, the Coalition helps partners form coalitions of stakeholders for national or sub-national (i.e. "micro") elimination programmes. The Coalition honours the extraordinary work of Hepatitis Elimination Champions who through their passion, perseverance and ingenuity achieve remarkable advances toward hepatitis elimination often in resource constrained settings (<https://www.globalhep.org/champions>).

COALITION ACTIVITIES IN CHINA

Technical Assistance

Clinicians in Hong Kong and Guangzhou assist Coalition technical assistance and operational research activities. Dr Jinlin Hou, MD, Chairman and Professor of the Hepatology Unit and Department of Infectious Diseases, Nanfang Hospital, Southern Medical University, Guangzhou is a member of the Coalition Technical Advisory Board. Dr Hou advises responses

to clinical questions, HBV PMTCT and operational research on HCV retreatment.

To inform the care of persons with viral hepatitis and other chronic liver diseases during the COVID-19 pandemic, Dr George Lau, Chairman of Humanity and Health Medical Group, Hong Kong and Chair Professor and Director of the 5th Medical Centre of Chinese PLA General Hospital - Hong Kong Humanity & Health Medical Group, Beijing, synthesised recommendations from three regional liver associations (APASL, AASLD, EASL) for the management of patients with chronic liver disease (<https://www.globalhep.org/evidence-base/covid-19/clinical-liver-disease-covid-19-special-series>).

Operational Research

The Coalition resources include China research findings. Study results guide the implementation of maternal antiviral prophylaxis for HBV EMTCT^{17,18}. Investigations reveal new strategies efforts to simplify HCV therapy¹⁹. The Coalition community of practice provides new opportunities for collaborative research²⁰.

Elimination Champions

In 2019, the Coalition recognised Dr Ba Wensheng, of the Department of Immunisation, Qinghai Center for Diseases Prevention and Control, for his work to improve HepB vaccination among children in agricultural and high altitude areas of western China. In 2020, Linda Zhang manager of Stanford Center at Peking University in Beijing was honoured for her successful efforts to convince the Mayor of Suzhou to ban discriminatory practices in the workplace and in schools in improving economic and educational opportunities for an estimated 600,000 persons living with Hepatitis B (<https://www.globalhep.org/champions>).

Community of Practice

As partners in the Coalition community of practice, individuals and organisations can contribute financial support and join teams advancing progress in a particular country, the Asia Pacific and globally. Clinicians, civil society organisations and public health officials in China can share clinical know-how, successful public health strategies and contribute research findings. The Coalition data dashboard reveals China's HBV and HCV burden of disease, strengths and challenges for hepatitis elimination (Fig. 2). China and other countries can share technical expertise in HBV PMTCT, including moving to a triple elimination framework for HIV, syphilis and HBV.

In return, the experience learned from Coalition partners can help scale-up HBV care in China and meet other challenges to hepatitis elimination. One concern is the over 80% of PWID who have been infected with HCV¹⁹. New strategies for HCV testing and treatment for PWID are needed.

CLOSING

We, as global citizens, have a rare opportunity to work together, reach goals for hepatitis elimination by 2030



and avert over four million deaths including over 40% of lives saved in China, and other Asia Pacific countries. Nations need help preventing HBV and HCV transmission and disease. From a start in Hong Kong with the first public-private partnerships for hepatitis elimination, the Coalition for Global Hepatitis Elimination, is now the community of practice building capacity for hepatitis elimination through funding, advocacy, technical assistance, and operational research. The Coalition looks forward to continued collaborations with partners in China and other Asia Pacific countries to reach hepatitis elimination goals.

Working together, we will eliminate hepatitis.

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