

Hepatitis C Burden in Pakistan: Crisis that Could Be Averted

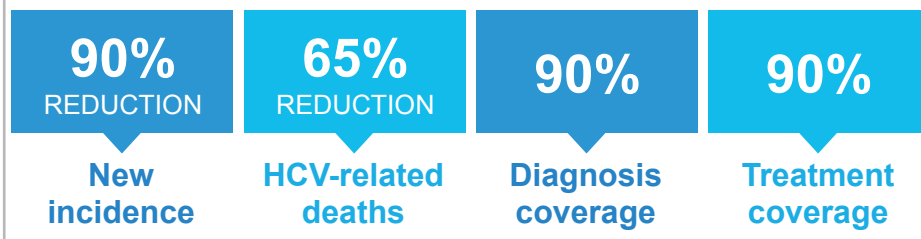


Jagpreet Chhatwal, PhD,¹ Qiushi Chen, PhD,¹ Xiaojie Wang, MS,² Turgay Ayer, PhD,³ Naveed Janjua, PhD,⁴ Fasiha Kanwal, MD,⁵

¹ Massachusetts General Hospital Institute for Technology Assessment, Harvard Medical School, Boston, MA USA, ² Department of Industrial and Systems Engineering, University of Florida, Gainesville, FL, ³ H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA USA, ⁴ British Columbia Centre for Disease Control and School of Population and Public Health, University of British Columbia, Vancouver, Canada, ⁵ Michael E. DeBakey Veterans Affairs Medical Center, ⁶ Department of Medicine, Gastroenterology and Hepatology, Baylor College of Medicine, Houston, TX USA

BACKGROUND

The World Health Organization (WHO) recently launched a global strategy to eliminate hepatitis C virus (HCV) infection as a public health threat by 2030.



- 90% of the HCV-infected individuals worldwide are unaware of their infection status; but there are no formal recommendations on population-based screening for HCV.
- More than half of HCV infected individuals live in Asia, and **Pakistan has one of the highest prevalence rates of HCV – about 8 million individuals have chronic HCV.**
- Data are needed to inform national screening and treatment guidelines that could lead to HCV elimination in Pakistan by 2030.

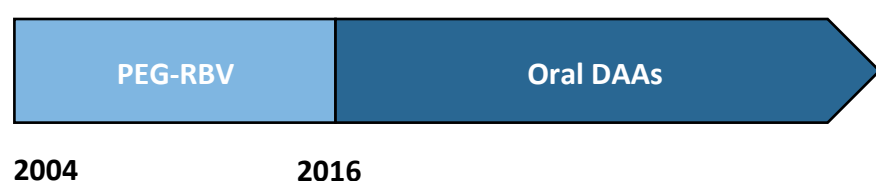
OBJECTIVE



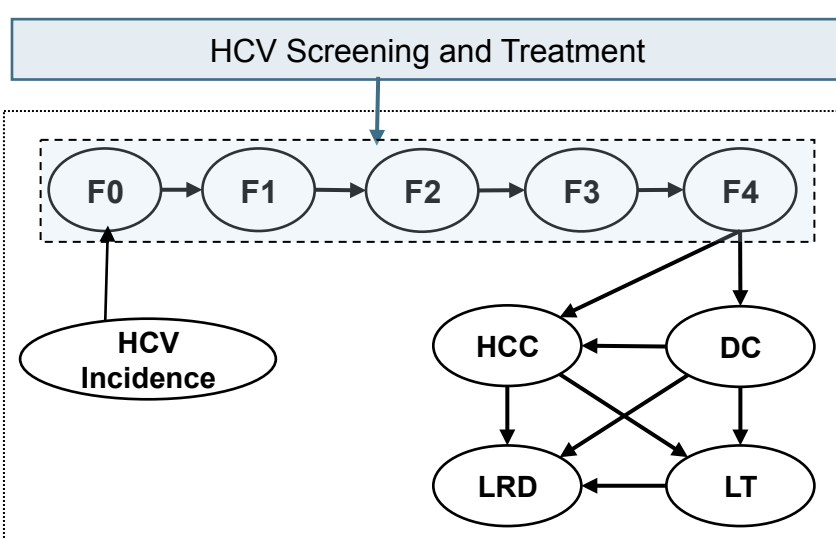
- To project the future burden of HCV disease in Pakistan, under the status quo.
- To investigate whether and under what conditions HCV elimination is feasible in Pakistan by 2030.

METHODS

- We adapted our previously developed model, **Hepatitis C Disease Burden Simulation model (HEP-SIM)**, to simulate the HCV landscape in Pakistan.
- HEP-SIM was calibrated to the prevalence estimates based on a national survey in 2008.
- The model simulated the actual clinical management of HCV in Pakistan including sporadic HCV testing and antiviral treatment with peginterferon-based therapies during 2004–2015, oral direct-acting antiviral (DAAs) from 2016 and onwards.



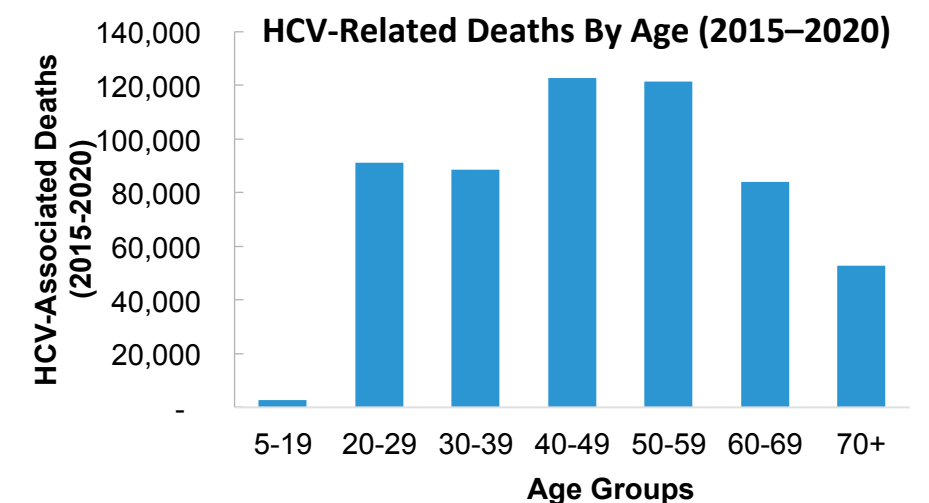
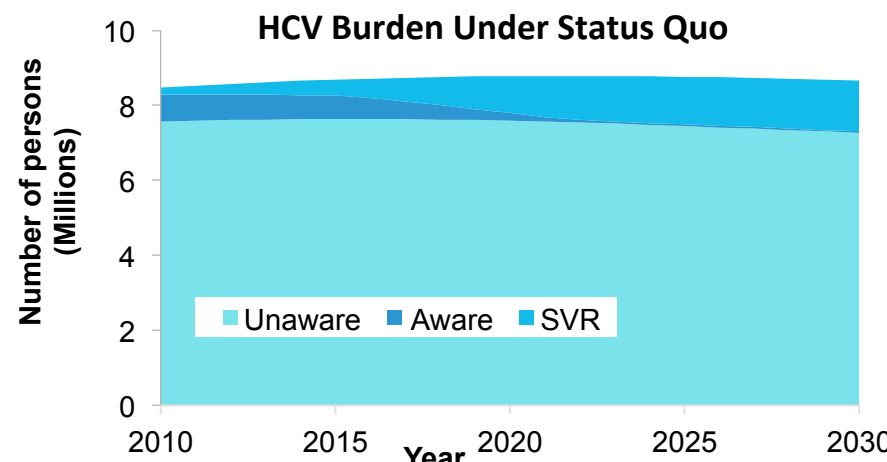
- The natural history of HEP-SIM has been validated using multiple clinical studies.
- We simulated different scenarios of HCV incidence, screening and treatment capacity in Pakistan.



RESULTS

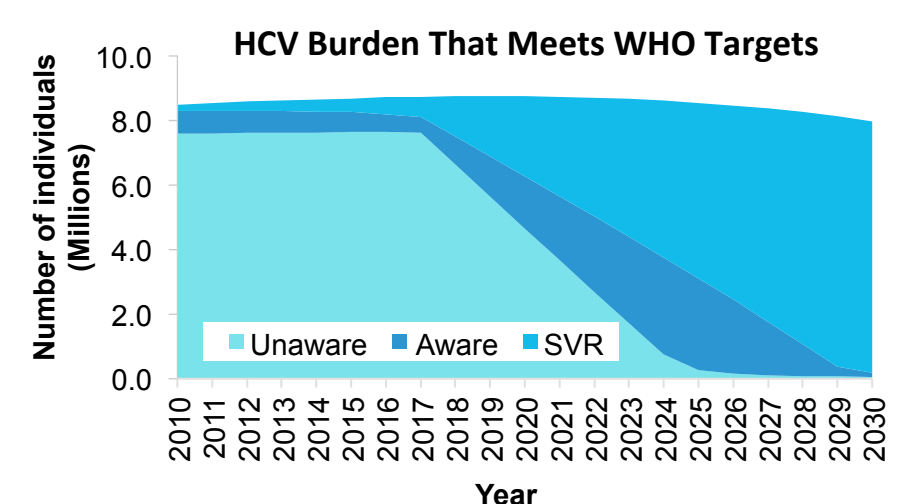
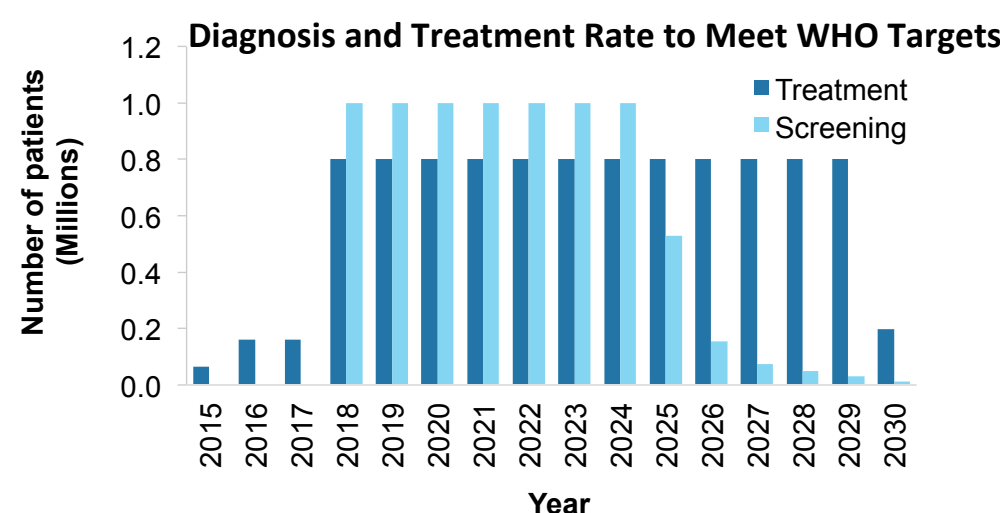
HCV Burden Under Status Quo

- HCV burden would remain high** under status quo
- The majority would remain unaware** of their infection, so will not receive treatment
- High mortality in younger generation:** The majority of deaths from HCV in Pakistan would occur among those having age less than 50.

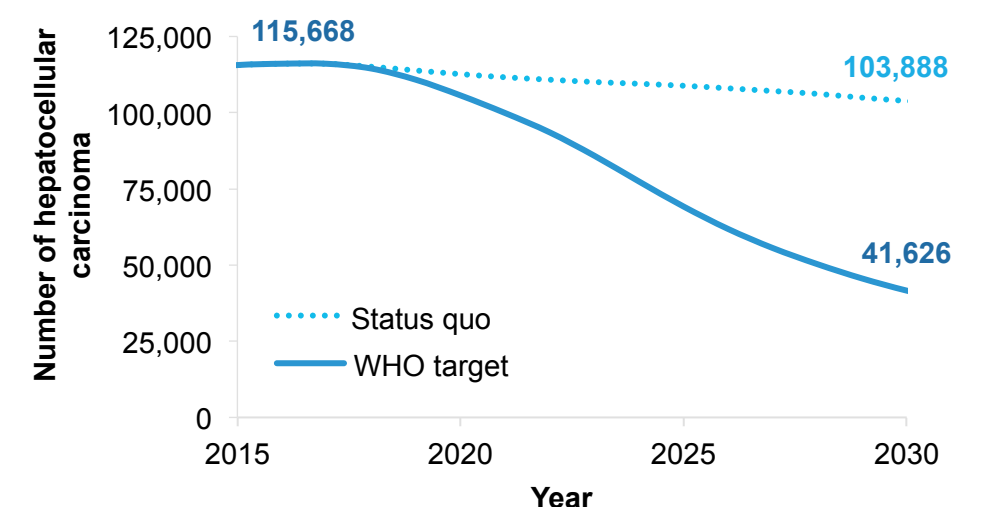
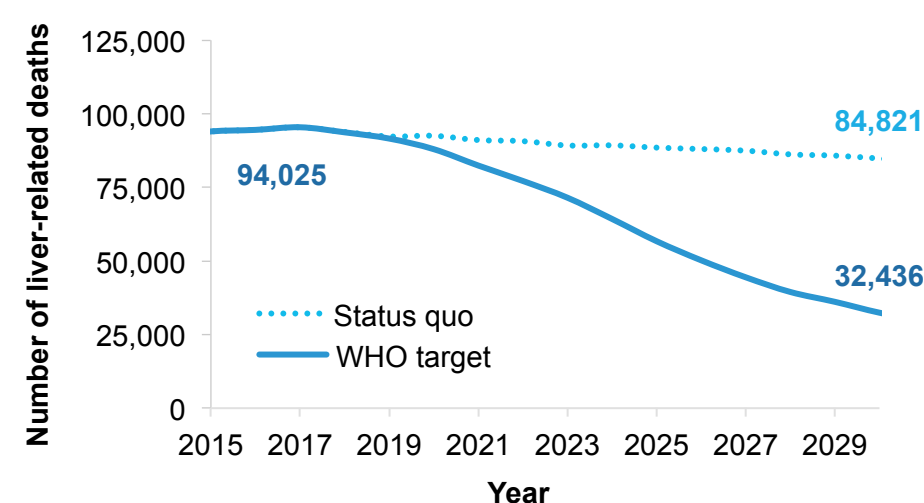


HCV Elimination: WHO Targets

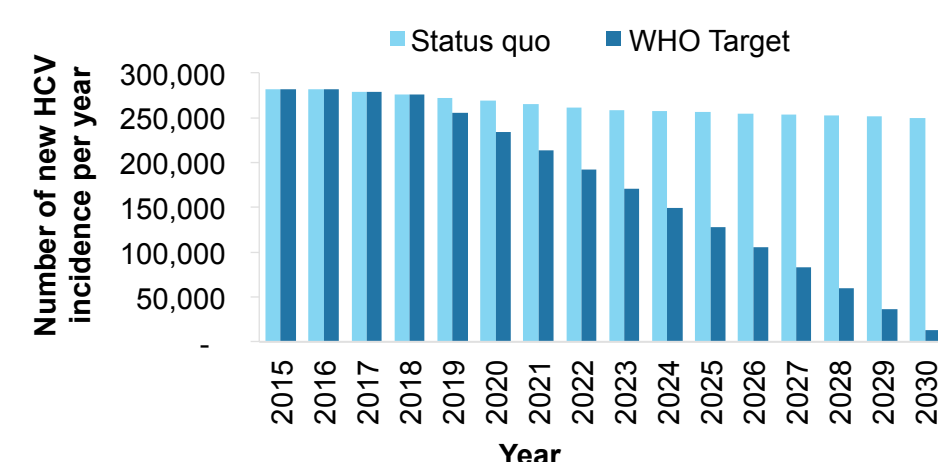
- To achieve HCV elimination targets by 2030, the **diagnosis rate for HCV needs to be 1 million/year** and **treatment rate needs to be 800,000/year** from 2018 onwards.



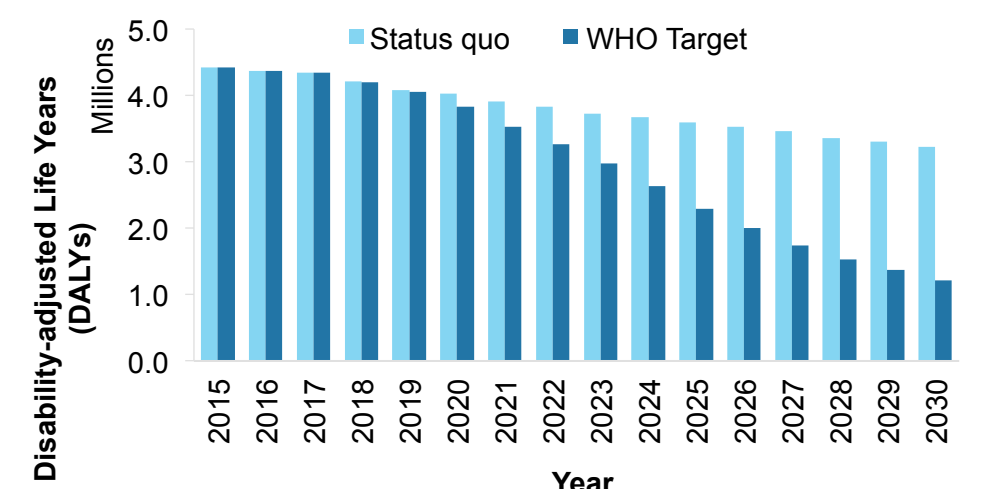
- HCV-related deaths** would reduce from 94,000 in 2015 to 32,400 in 2030 (65.5% reduction), and the number of **liver cancer** cases would reduce from 115,700 to 41,600 (64.0% reduction).



- Scaling-up screening and treatment would **substantially reduce HCV incidence from 280,000 to below 20,000 by 2030.**



- From 2015 to 2030, scaling-up screening and treatment would **avert 13.3 million disability-adjusted life years (DALYs)** in total.



CONCLUSIONS

- Based on current HCV management practices, **HCV burden would continue to remain substantial in Pakistan.**
- The majority of HCV patients would die young.**
- In order to eliminate HCV by 2030, a national plan is needed to develop policies that could diagnose 1 million patients/year and treat 800,000/year.**

CONFLICTS OF INTEREST

Dr. Chhatwal has received research grants from Merck and Gilead, and has served on the scientific advisory committees of Merck and Gilead.

Contact Information

Jagpreet Chhatwal, PhD
Institute for Technology Assessment,
Massachusetts General Hospital
101 Merrimac Street, Suite # 1010
Boston, MA 02114, United States
Jagchhatwal@mgh.harvard.edu

