

## Perspective

### Hepatitis C Elimination. Are we on course for 2030?

Huma Qureshi,<sup>1</sup> Ambreen Arif<sup>2</sup>

<sup>1</sup>National Focal Person Hepatitis and Consultant Gastroenterologist, Doctor's Plaza Clifton, Karachi, Pakistan; <sup>2</sup>Research Fellow Hepatology, UFoT, Research associate, Doctors Plaza Clifton, Karachi, Pakistan

#### Abstract

The World Health Organization (WHO) has designated the year 2030 as a landmark year for “Viral Hepatitis Elimination”. Among the WHO member states, Pakistan has the largest chronic hepatitis C (CHC) infected population and like other countries, Pakistan is also striving for the hepatitis C elimination goal.

Baseline screening is the mainstay of dealing with this public health challenge. Innovative interventions are needed, to achieve this goal, such as scale-up of the baseline screening using rapid anti-HCV tests, which can later be followed by HCV RNA. All those who test positive for HCV RNA, require treatment to enable us to reach the milestone of ‘Hepatitis C elimination by year 2030’.

The modeling done by the CDA to determine the number of people to be tested and treated alongside the support for HCV elimination coming from the Prime Minister's (PM) programme in Pakistan are all the factors, which when put together, show that we might achieve the testing, treatment and cure for those who are currently infected. The yearly addition of new HCV infections may prove to be a major barrier in achieving HCV elimination. Therefore, timely prevention of new infections has to be our number one priority.

This article is based on the webinar presentation, made by Dr. Huma Qureshi on the theme of Hepatitis C eradication, in the KEMCA UK Universal Healthcare Programme.

**Corresponding Author** | Dr Ambreen Arif; E-mail: drambreenarif@gmail.com

**Keywords** | Chronic Hepatitis C; COVID-19, Liver-Related Deaths (LRD); SVR, Sustained Viral Response (SVR)

#### Introduction

Hepatitis C is a major public health problem in Pakistan. At present, Pakistan has the highest disease burden due to chronic hepatitis C (CHC) virus infection.<sup>1</sup> HCV prevalence in Pakistan was studied at the national level in 2008. This sero-survey was conducted by the Pakistan Medical Research Council (PMRC)<sup>2</sup> and the prevalence of Hepatitis C antibodies was estimated to be approximately 5% (8 million). However, recently, other prevalence studies done in Pakistan have shown an increasing trend in chronic hepatitis C (CHC) infections, particularly in the provinces of Punjab<sup>3,4</sup> and Sindh.<sup>5</sup> The overall estimated prevalence of hepatitis C was found to be 8.6 % in Punjab and 6.1% in Sindh making an overall prevalence of 7.5%. The HCV RNA detection rates were

59.8% and 54% respectively.

Modeling predicts that without proper interventions and scale up of HCV treatment, these figures may jump up to epidemic proportions, as recently seen during the ongoing COVID-19 pandemic. There has been a positive impact of COVID-19 pandemic particularly in perspective of Pakistan (PAK.) which include the “Covid-19-Pakistan preparedness and response action plan (PPRP)” that received accreditation by the World Health Organization (WHO).<sup>6</sup> Pakistan through this very platform was able to launch the first (1st) online global strategic preparedness forum to stop the transmission of COVID-19 infection. On the same note implementation of early lockdown (to main social distance) and closing of borders in Pakistan was a second but most important strategy to curb the movement of infectious carriers. Thirdly, piggy-backing onto the existing polio vaccination framework<sup>7</sup> was an icing on the cake by the Pak. government to pool resources and synergize efforts for vaccination and contact tracing. Last, but not the least, is the global implementation



#### Production and Hosting by KEMU

<https://doi.org/10.21649/akemu.v30i1.5738>  
2079-7192/© 2024 The Author(s). Published by Annals of KEMU on behalf of King Edward Medical University Lahore, Pakistan.  
This is an open access article under the CC BY4.0 license  
<http://creativecommons.org/licenses/by/4.0/>

of COVID-19 vaccination to put an end to the pandemic. Similarly targeted efforts focused mainly on screening, diagnosis and treatment are much needed for hepatitis C virus infection elimination.

National hepatitis C treatment guidelines for Pakistan were developed in 2018<sup>8</sup> and were kept simple enough to be used by general practitioners and hepatitis programs at large. The guidelines recommend that all virus-positive cases are eligible for treatment and that duration of treatment should either be a total of 12 and/or 24 weeks and this should be decided by using the APRI SCORE (with exception of pregnant, lactating mothers and children < 12 years). Pakistan is fortunate enough to have been producing pan-genotypic direct-acting antivirals at the lowest cost in the world. The efficacy of these generic medicines is over 85-95% in most studies at SVR 12<sup>9,10,11</sup>. The cost of 12 weeks of therapy with Sofosbuvir and Daclatasvir is relatively lower than that of Sofosbuvir plus Velpatasvir.<sup>12</sup> In the current scenario, the bottleneck remains that very few people are aware of their disease due to the asymptomatic nature and therefore the unaware patients do not seek active testing and treatment, thereby creating a large pool of untreated and undiagnosed people in the community.

Taking notice of this high burden of disease yet the ease to eliminate the hepatitis C virus, virtually within a few weeks of treatment, the Prime Minister (PM) of Pakistan, has agreed to launch a hepatitis C virus elimination programme to be implemented over the next 5 years (till 2030),<sup>13</sup> which has also received endorsement by the President of Pakistan. The salient features of the PM Programme are that all patients above the age of 12 years will be screened using rapid HCV testing. It is assumed that 10% of the population will be positive (17 million) for chronic hepatitis C. Following this, these 17 million HCV-positive patients will undergo PCR testing and if this hypothesis is correct then 60% may have the virus and thus would need treatment, we are looking at treating 15 million people free of cost. This scientific modeling/mathematics needed the support of the modelers. Therefore, Homie Razavi from the Center of Disease Analysis (CDA) was requested by the Federal government to undertake the modeling for Pakistan.

CDA has shown that as of 2021,<sup>14</sup> there are 10 million viraemic cases and out of these 3.3 million have been treated and 3 million (96%) have been cured. We are lagging behind the PCR testing and if we improve this we can put all those to treatment and cure 96% of them. As far as newer infections are concerned, presently we have 450,000 new infections occurring each year<sup>15</sup> (10% of global HCV infection). If we do not do any intervention, the new HCV infection will go down slowly to 323,000 each year and this slow drop can

be further improved by adhering to infection prevention control practices in health care settings.

WHO (World health organization) has based the hepatitis elimination targets on a 90/80/90 design pattern. Breakdown of these figures signify that 90% of chronic HCV should be diagnosed through mass screening. Approximately 80% of these eligible patients should then be treated and 90% of those treated should have a cure. Hence, in summary, there should be approximately 90% and 65% reduction in the incidence (new infections) and liver-related deaths (LRD) respectively to make a significant impact towards hepatitis C elimination targets.<sup>16</sup>

Backtracking to the year 2016, the World Health Assembly endorsed a global health sector strategy (GHSS) on viral hepatitis.<sup>17</sup> This was the first-ever commitment towards hepatitis elimination. The Hepatitis C elimination target was set to be achieved by the year 2030 and it was ambitiously proposed that a reduction in the incidence of chronic HCV cases by 0.9 million will be achieved by year 2030.<sup>18</sup> But so far, accounting for the past year and a half, due to the ongoing Covid-19 pandemic, there has been a significant delay in vaccine delivery, screening, diagnosis and treatment, thus halting hepatitis elimination programs worldwide as recently reported by Blach S et al.<sup>19</sup> This impact will result in an additional 44,800 liver cancers and 72,300 HCV-related deaths globally by the year 2030. If we continue with the status quo, we will not be able to achieve the world health organization (WHO), HCV elimination targets by 2030.<sup>20</sup> The model estimates that each year Pakistan has to treat 1 million cases to achieve the 2030 elimination targets. Similarly, new cases of HCV must be reduced by enhancing efforts 10 times the present rate.<sup>21</sup>

Likewise new data on hepatitis C released by the Polaris Observatory, also shows that 9 countries Australia, Brazil, Egypt, Georgia, Germany, Iceland, Japan, Netherlands, and Qatar are on track to meet the WHO target of eliminating hepatitis C with the UK not far behind.<sup>22</sup> In Pakistan, the PM Programme is being launched as a support program to the already existing provincial hepatitis programs. The PM program shall procure the commodities i.e rapid tests, PCR and the treatment and shall pass on to the provinces on their need/demand base. Monitoring of the utilization of these commodities shall be done by the provinces and the federal government. The federal health ministry shall be the custodian of the project. Provinces will enhance their capacity to screen, test and treat more patients and strengthen infection prevention i.e safe blood, safe injections and infection control in the health care settings. The plan is to screen all population over 12 years of age using health facility-based screening along with community screening. All those who are found to

be reactive on the rapid test shall have their blood collected immediately (reflex testing) for HCVRNA, CBC and AST> CBC and AST shall be used to calculate the APIR score for deciding the duration of therapy (APRI <1.5 receive 12 weeks treatment and those with >1,5 receive 24 weeks treatment. Private sector engagement along with engaging other stake holders like department of education, religious affairs, water and sanitation, NGOs, corporate sector, airlines, railways, army will help in making this huge possible. Hence, by adhering to this plan we can achieve elimination by 2030.

## Conclusion

In conclusion, the 2030 hepatitis elimination targets seem difficult to be achieved in Pakistan, especially at the current pace. However combining the PM's programme for hepatitis C elimination with other similar stakeholders such as the provincial hepatitis programmes, harm reduction, blood safety and infectious disease control services can bring a huge change in the current momentum. In the PM programme alone, screening, testing and treatment will be increased 8 times to that of the present figures and new infections will thereby be reduced by 5 times.

Hence, abiding by this hypothesis of a combined annotation approach, (one-time mass screening plus follow through with active treatment) we should be successful in toppling the hepatitis C (HCV) virus infection dominos. This in turn should be able to achieve an almost 80% reduction in the incidence and 65% reduction in liver related mortality secondary to chronic hepatitis C infection by year 2030, placing us more closer to our target .

## References

- Gower E, Estes C, Blach S, Razavi-Shearer K, Razavi H. Global epidemiology and genotype distribution of the hepatitis C virus infection. *J Hepatol.* 2014;61(1 Suppl):S45-57.
- H. Qureshi, K.M. Bile, R. Jooma, S.E. Alam, H.U.R. Afridi. Prevalence of hepatitis B and C viral infections in Pakistan: findings of a national survey appealing for effective prevention and control measures. *EMHJ-Eastern Mediterranean Health Journal.* 2010;16 (Supp):15-23. 2010
- Ahsan A, Khan AZ, Javed H, Mirza S, Chaudhary SU, Shahzad-ul-Hussan S (2019) Estimation of hepatitis C prevalence in the Punjab province of Pakistan: A retrospective study on general population. *PLoS ONE* 14(4): e0214435.
- Final Report-Population based prevalence survey of hepatitis B & C Punjab [ Accessed January 5th 2022] Available from: <http://bos.punjab.gov.pk>
- Asghar S ,Rasheed U, Hassan M, Akram M , Yaseen R, Fayaz B. A cross-sectional screening survey on the seroprevalance of hepatitis B and hepatitis C amongst the general population of rural districts of Sindh, Pakistan.*Arq Gastroenterol.* 2021; 58(02):65-72.
- The World Health Organization Newsroom Available from: <https://www.who.int/news-room/feature-stories/detail/covid-19-in-pakistan-who-fighting-tirelessly-against-the-odds>. [ Accessed 10 March 2022.]
- NAP-covid-19\_AL@version-3-date-12-2-2020-with-annexures.pdf. [Accessed 10 March 2022]
- Ministry of National Health Services, Regulations and Coordinations (NHSRC), Pakistan. National Hepatitis Strategic Framework (NHSF) for Pakistan 2017–21. Available from: <http://phrc.org.pk/Extra/NHSF>. [Accessed 28 March 2022]
- Sarwar S., Khan A.A. Sofosbuvir based therapy in hepatitis C patients with and without cirrhosis: Is there difference? *Pak. J. Med. Sci.* 2017;33(1):37–41. doi: 10.12669/ pjms. 331.12163.
- Mushtaq S, Akhter TS, Khan A, Sohail A, Khan A, Manzoor S. Efficacy and safety of generic sofosbuvir plus daclatasvir and sofosbuvir/velpatasvir in HCV genotype 3-infected patients: real-world outcomes from Pakistan. *Frontiers in Pharmacology.* 2020;11(1):550205.
- Capileno YA, Van den Bergh R, Donchuk D, Hinderaker SG, Hamid S, Auat R, Khalid GG, Fatima R, Yaqoob A, Van Overloop C. Capileno YA, et al. Management of chronic Hepatitis C at a primary health clinic in the high-burden context of Karachi, Pakistan. *PLoS One.* 2017; 12(6): e0180286.
- Barber MJ, Gotham D, Khwairakpam G, Hill A. Price of a hepatitis C cure: Cost of production and current prices for direct-acting antivirals in 50 countries. *J Virus Erad.* 2020; 6(3):100001.
- 15 million people affected with hepatitis B& C in Pakistan. Government announces ambitious plan to eliminate hepatitis. *WHO Newsletter* [Accessed 29 March 2022]
- CDA Foundation. Polaris Observatory 2020. 2020 Available from: <https://cdafound.org/polaris/>. [Accessed 28 March 2022]
- Lim AG, Walker JG, Mafirakureva N, Khalid GG, Qureshi H, Mahmood H, Trickey A, Fraser H, Aslam K, Falq G, Fortas C, Zahid H, Naveed A, Auat R, Saeed Q, Davies CF, Munkandavire C, Glass N, Maman D, Martin NK, Hickman M, May MT, Hamid S, Loarec A, Averhoff F, Vickerman P. Effects and cost of different strategies to eliminate hepatitis C virus transmission in Pakistan: a modelling analysis. *Lancet Glob Health.* 2020;8(3):e440-e450.
- World Health Organization. Combating hepatitis B and C to reach Elimination by 2030. World Health Organization (2016). Available from: <https://www.who.int/hepatitis/publications/hep-elimination-by-2030-brief/en/>. [Accessed 28 March 2022].
- WHO Global hepatitis report 2017. Available from: <https://www.who.int/hepatitis/publications/global-hepatitis-report-2017/en/>. Accessed 28 March 2022].
- World Health Organization. Global health sector strategies on viral hepatitis 2016–2021. Available from: URL <https://www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/>. Accessed 28 March 2022].

19. Blach S, Kondili LA, Aghemo A, Cai Z, Dugan E, Estes C, Gamkrelidze I, Ma S, Pawlotsky JM, Razavi-Shearer D, Razavi H, Waked I, Zeuzem S, Craxi A. Impact of COVID-19 on global HCV elimination efforts. *J Hepatol.* 2021; 74(1): 31-36.
20. Mahmud S, Al Kanaani Z, Abu-Raddad LJ. Characterization of the hepatitis C virus epidemic in Pakistan. *BMC Infect Dis.* 2019;19(1): 809
21. Hepatitis C eradication. Are we on course for 2030? Webinar presentation, made by Dr. Huma Qureshi. Online KEMU Symposium on December 20th, 2020. [Accessed 10 Jan 2022].
22. Just 12 countries worldwide on track to eliminate hepatitis C virus infection by 2030, with United Kingdom, Italy and Spain among those joining the list .Accessed March 29th 2022.
23. Lim AG, Qureshi H, Mahmood H et al. Curbing the hepatitis C virus epidemic in Pakistan: the impact of scaling up treatment and prevention for achieving elimination. *Int J Epidemiol.* 2018;47(1):550-60.