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A Renewed Commitment: Pakistan's policy response to hepatitis B and C

Pakistan's policymakers are waking up to the scale of hepatitis C virus (HCV) infection in the country and elevating it to a public health priority after years of inadequate action. Meanwhile, stable or declining infection rates of the hepatitis B virus (HBV) in many regions suggest Pakistan's vaccination programme is currently holding this virus strain at bay.

Around 15m people are currently living with hepatitis B or C in Pakistan, the second highest in the world.[1,2] Official data are more than a decade old—a national survey from 2007-08 found a prevalence of 4.8% for HCV and 2.5% for HBV.[3] Previous treatments were comparatively ineffective in Pakistan, where the genetic makeup of the population leaves them susceptible to certain strains of the virus. The result was a cure rate of just 50%, according to Huma Qureshi, a consultant gastroenterologist focusing on liver diseases (formerly the executive director of the Pakistan Health Research Council and national lead on the prevention and control of viral hepatitis).[4]

More recently, a survey conducted in Punjab, one of the country's largest provinces, showed that rates of HCV increased sharply from to 6.7% in 2008 to 17% in 2017.[5] The prevalence of HBV, on the other hand, decreased slightly to 2.2% from 2.4% over the same period. This was attributed to the introduction of an HBV vaccination programme for infants at six weeks of age.[6]

The findings of similar regional surveys combined with a provincial infection scandal (see next section) have created a greater sense of urgency among policymakers. According to one study, tackling HCV effectively will save

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[1] "15 million people affected with hepatitis B and C in Pakistan: Government announces ambitious plan to eliminate hepatitis", *World Health Organisation*, 2019. https://www.who.int/hepatitis/news-events/pakistan-hepatitis-elimination-plan/en

[2] The Polaris Observatory HCV Collaborators, "Global prevalence and genotype distribution of hepatitis C virus infection in 2015: a modelling study",*The Lancet: Gastroenterology & Hepatology*, Vol.2, No.3, 2017, , pages161–76. https://www.thelancet.com/journals/langas/article/PIIS2468-1253(16)30181-9/fulltext

[3] H Qureshi, K M Bile, R Jooma et al., "Prevalence of hepatitis B and C viral infections in Pakistan: findings of a national survey appealing for effective prevention and control measures", Eastern Mediterranean Health Journal, Vol.16, Supplement, 2010, pages S15-S23. http://www.emro.who.int/emhj-volume-16-2010/volume-16-supplement/article-02.html

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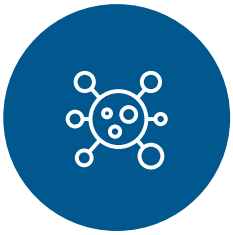


15m

People living with hepatitis B or C in Pakistan

more than 320,000 lives and US$2.6bn in direct costs between 2015 and 2030.[7] But crafting the appropriate policy response requires a deeper understanding of the underlying causes of current viral hepatitis rates in the country alongside its existing prevention and control policies.

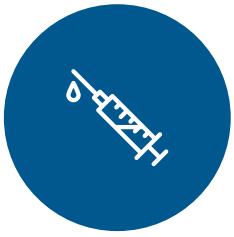
Unsafe injections: A key driver

Reuse of syringes has been the primary cause of high HCV rates in Pakistan, especially in rural districts says Arshad Altaf, an injection safety expert.

Dr Qureshi concurs, explaining that "there is a perception that injections are better than other medications" which drives patient demand. In 2012, the result was a rate of 5.15 injections per person per year as opposed to a global average of 1.64 in 2015.[8,9] More importantly, it is estimated that 17-50% of injections are administered with reused syringes.[10] A review of injection practices between 2011 and 2015, published in 2019, found that Pakistan has the highest number of unsafe injections in the world.[11]

The healthcare system in Pakistan is highly fragmented, making it harder to regulate healthcare providers and control injection safety. The private sector makes up 70% of Pakistan's healthcare sector. "Private providers have mushroomed everywhere," says Dr Altaf. "These are responsible for the majority of the injections administered; patients turn to private providers after government hospitals close at 2pm."[12]

In other cases, some smaller healthcare providers cannot afford to purchase new syringes. Combined with little public awareness of the risk factors for blood-borne illnesses, especially in rural areas where



5.15

Injections per year in Pakistan in 2012

1.64

Injections per year globally in 2012

[4] L Rong, A S Perelson, "Treatment of hepatitis C virus infection with interferon and small molecule direct antivirals: viral kinetics and modelling", Critical Reviews in Immunology, Vol.30, No.2, 2010, pages 131-148. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2882097/
[5] A Ahsan, A Z Khan, H Javed et al.,"Estimation of hepatitis C prevalence in the Punjab province of Pakistan: A retrospective study on general population", Plos One, 2019. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0214435
[6] "Hepatitis-B", Government of Pakistan: Expanded Program on Immunisation, 2019. http://www.epi.gov.pk/vaccine-preventable-diseases/hepatitis-b/
[7] J Chhatwal, Q Chen, X Wang et al., Jama Network Open, Vol.2, No.5, 2019. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6512462/
[8] T Hayashi, Y J F Hutin, M Bulterys, "Injection practices in 2011–2015: a review using data from the demographic and health surveys", BMC Health Services Research, Vol.19, No.600, 2019. https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-019-4366-9/tables/3
[9] Ibid
[10] Ibid
[11] Ibid
[12] EIU to confirm

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Figure 1: How is hepatitis B and C transmitted?

Source: WHO: https://www.who.int/features/qa/76/en/

illiteracy rates are high, syringe reuse has led to the spread of HCV.

Inadequate blood control policies compound the issue, and the fragmentation of the healthcare system appears to be an impediment here too. "Blood banks are supposed to be regulated by the government, but they are not," says Dr Altaf. "Every region has a regional blood transfusion [authority]. Small blood banks [are often] where blood is unclean."

Poor waste management at healthcare facilities results in the improper disposal of needles and blades, which spreads the disease. In addition, a lack of prevention programmes for high-risk groups, such as drug users and sex workers, has led to frequent co-infection of HIV and hepatitis which then spreads to lower-risk groups such as children.

Until this year, the country's district health administrators had largely focused on polio prevention, leaving blood-transmitted viruses as a secondary concern. But in April 2019 an outbreak of HIV in the Larkana District (Sindh province) highlighted the consequences of inadequate oversight. More than 800 people (82% of whom were children) were found positive. The incident was deemed to be a result of unsafe injections, unsafe practices at blood banks, weak infection control programmes and improper disposal of hospital waste—the same risk factors as HCV.[13,14]

The crisis served as a wake-up call for the Ministry of Health (MoH). In June 2019 it invited a team of international experts to Pakistan who concluded that policymakers need to make a greater commitment to the prevention of blood-borne illnesses, particularly with regard to its HCV strategy. "Prevention has never been the focus of any government in

"Prevention has never been the focus of any government in Pakistan; everything has been about treatment because it is visible. Pakistan needs to focus on prevention—by doing so, we could save a lot of money."

Dr Arshad Altaf, injection safety expert

[13] A Altaf, S Iqbal et al., "A third major human immunodeficiency viruses (HIV) outbreak in Larkana, Pakistan: caused by unsafe injection practices," Journal of the Pakistan Medical Association, Vol.69, No.8, 2019.
[14] "HIV cases—Pakistan", World Health Organisation, July 3rd 2019. https://www.who.int/csr/don/03-july-2019-hiv-cases-pakistan/en/

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Estimates for screening and testing programme for viral hepatitis in Pakistan:

140m
To be screened

14m
Likely to test positive and require further testing

10m
Likely to require treatment

Pakistan; everything has been about treatment because it is visible," claims Dr Altaf. "Pakistan needs to focus on prevention—by doing so, we could save a lot of money."

A national plan for a fragmented healthcare system

In response, on World Hepatitis Day in July 2019, the MoH announced an ambitious screening and treatment programme to eliminate HCV and HBV by 2030.[15] This programme aims to scale up prevention, testing and treatment efforts in the four provincial-level hepatitis programmes, supplementing the existing National Hepatitis Strategic Framework 2017-2021.[16]

The aim is to test and treat 70% of the population by 2023. Based on modelling supported by the University of Bristol and the Centers for Disease Control and Prevention (CDC), initial estimates indicate that around 140m people will need to be screened. Of these, 14m may be positive for HCV and will require more sophisticated testing while approximately 10m are likely to require treatment.

Testing and treatment will be offered to the public free of charge. The government's healthcare budget has funds earmarked for HCV treatment, but this will not cover the cost of testing and treatment across the country. The government estimates that the investment will be upwards of US$3bn over the next 10 years and there is some confidence that funding can be found from various sources, says Saeed Hamid, professor of gastroenterology at Aga Khan University, a co-organiser of this year's World Hepatitis Day.

To raise this amount funds are expected from the Asian Development Bank and the World Bank. Governance of these funds must be strengthened, as there are concerns over improper use and corruption, according to interviewees. The plan is for the federal

Estimated cost of screening and treatment programme for viral hepatitis in Pakistan

US$3bn

[15] "15 million people affected with hepatitis B and C in Pakistan: Government announces ambitious plan to eliminate hepatitis", World Health Organisation, July 28rd 2019.
https://www.who.int/hepatitis/news-events/pakistan-hepatitis-elimination-plan/en/
[16] H Mahmood, H Qureshi, H Khattabi et al., "Pakistan's National Hepatitis Strategic Framework", World Hepatitis Summit,2017.http://www.worldhepatitissummit.org/docs/default-source/posters/5a_dr-hassan-mahmood.pdf?sfvrsn=2

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"There is very low public awareness about the [viral hepatitis] disease. Many people believe it is spread through unclean water, contaminated food or other environmental problems."

Dr Huma Qureshi, former executive director, Pakistan Health Research Council

government to procure tests and medication and distribute them to provinces.

The announced programme focuses almost entirely on HCV. Policies for HBV will be revisited after a couple of years, says Dr Qureshi, by which time they hope to have the HCV epidemic under control. Policies around HBV are more difficult to craft as not all who test positive for the virus require treatment, she explains. As part of the existing plans, however, the government will make the birth dose of the HBV vaccine mandatory by 2020; the first dose will then be provided within the first 24 hours rather than six weeks after birth.

Finding the missing millions

Raising public awareness of risk factors, prevention strategies and access to care is imperative to the success of the government's programme. "But there is very low public awareness about the [viral hepatitis] disease," states Dr Qureshi. "Many people believe it is spread through unclean water, contaminated food or other environmental problems."

A mass education campaign will be required and there are lessons here for Pakistan from countries such as Egypt, which completed a mass screening programme in 2019.[17] Greater public awareness can create caution around common modes of transmission such as contaminated razor blades used at barbers and salons. The government will need to develop a tailored message for its country, and it is essential that this is deployed in regional languages. A large share of the population is uneducated and awareness campaigns in English or Urdu only will not be sufficient, explains Dr Altaf.

The target is to replace half of syringes with auto-disabled ones by 2021.

In addition, a variety of media channels should be used. In Egypt, the government employed a multi-channel approach to educate the public using posters as well as television and radio adverts featuring a local celebrity. Addressing the public via social media such as Facebook and messaging services such as WhatsApp could be effective given Pakistan's high smartphone penetration and strong 4G network coverage. Lessons from raising awareness for polio should be taken into consideration (the campaign used SMS effectively for a number of years).

This must be complemented by training programmes for medical professionals. "Unfortunately, even many providers, especially untrained ones, are not aware of all the risk factors [for HCV]," observes Dr Altaf. Training is required not just on preventative measures but

[17] "Endgame: Egypt's path to eliminating hepatitis B and C", Economist Intelligence Unit, 2019. https://eiuperspectives.economist.com/sites/default/files/eiu-abbott_hepatitis_b_and_c_articles_egypt_12th_june_2019_web.pdf

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> **"Provincial health commissions already have the authority to check up on clinics and they will be given extra powers to compel those who are not following the rules."**
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> *Dr Huma Qureshi, former executive director, Pakistan Health Research Council*

also to facilitate diagnosis at primary healthcare centres. At present, diagnosis and treatment takes place mainly at the tertiary level.

Covering all bases: Prevention and infection control

To control the spread of the disease as screening and treatment are underway, prevention and infection control policies must be implemented. Pakistan's national plan includes measures to drive adoption of injection and blood safety practices across all healthcare facilities.

Injection safety was one of the interventions listed in the National Hepatitis Strategic Framework 2017-2021.[18] The target is to replace half of syringes with auto-disabled ones by 2021. Using disposable syringes is mandated by law only in the Sindh province, but implementation and oversight has been weak. "Auto-disabled syringes are expected to be phased in over the next two to three years [across Pakistan]," says Dr Qureshi. To meet the demand, the government is providing funding for 17 local producers to manufacture auto-disabled syringes.

Furthermore, "provincial health commissions already have the authority to check up on clinics and they will be given extra powers to compel those who are not following the rules." Improving injection safety will be one of the most critical interventions in Pakistan's fight against viral hepatitis.

Efforts to implement blood safety reforms have fared better. These commenced more than a decade ago in Pakistan and were led through a partnership between Germany's Agency for International Cooperation and Pakistan's federal and regional governments. The work included developing better-defined blood donor policies and improving the country's fragmented blood transfusion system by creating a centralised regime for testing and screening blood supplies.[19]

But there continue to be gaps in the system. Patients are still reliant on unlicensed blood banks, says Dr Altaf, and not all blood donations are screened for HBV and HCV.

An evaluation by the World Health Organisation' of blood screening systems in 2013 revealed that although 73% of the blood centres surveyed performed some form of internal quality control for transfusion-transmitted infections, 43% had no internal quality audit system.[20]

A comprehensive approach

Pakistan has an ambitious plan to address its hepatitis epidemic through a country-wide screening and testing programme. More broadly, the government's plan focuses on improving the safety of its blood banks,

[18] Ministry of National Health Services, Regulations and Co-ordination, Pakistan, "National Hepatitis Strategic Framework (NHSF) for Pakistan 2017-21", 2019.
http://www.phrc.org.pk/assets/pakistan-s-national-hepatitis-strategic-framework--09-01-2018.pdf
[19] H A Zaheer, U Waheed, "Blood Safety System Reforms in Pakistan", Vol.12, No.4, 2014.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4212023/
[20] Ministry of Capital Administration & Development Government of Pakistan, "National Baseline Survey – Evaluation of Blood Screening Systems", 2013.
http://sbtp.gov.pk/wp-content/uploads/2019/06/survey-on-monitoring-and-evaluation-of-blood-screening-systems-in-pakistan.pdf

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injections and disposal of medical waste. Progress on injection safety in particular has been slow and must be expedited. Public awareness campaigns will complement these efforts, educating people about the risk factors and empowering them to take control of their health.

For this programme to work, managing the fragmented healthcare system is essential. "The only way this will be successful is if there is a strong buy-in from the provinces, if there is a strong collaborative effort with the provinces to make it happen," says Dr Hamid. "This needs political will and the ability to find common ground for the benefit of the whole country."

Setting up a process for data collection across key performance indicators is pivotal for measuring progress and identifying areas where more aggressive action is needed. There are recommendations that, as part of the demographic and health survey conducted every four years, blood tests for HBV and HCV should be included. Only by taking a comprehensive approach can the government significantly reduce the spread of viral hepatitis, treat those infected and resolve this health crisis.

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Dr Saeed Hamid, professor of gastroenterology, Aga Khan University

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