Punjab Hepatitis Action Plan (PHAP)

2019-22

Contents

Acronyms

AD	Auto Destructible
BTA	Blood Transfusion Authority
CDC	Centers for Disease Control and Prevention
DAAs	Direct Acting Antivirals
DVH	Division of Viral Hepatitis
EMR	Eastern Mediterranean Region
EPI	Expanded Program on Immunization
FATA	Federally Administrative Tribal Areas
FELTP	Field Epidemiology and Laboratory Training Program
GAVI	Global Alliance for Vaccines and Immunization
GHSS	Global Health Sector Strategy
H&ICP	Hepatitis and Infection Control Program
H&ICP	Hepatitis and Infection Control Program
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCEs	Healthcare Establishments
HCV	Hepatitis C virus
HEV	Hepatitis E virus
HIV	Human Immunodeficiency Virus
HPCP	Hepatitis Prevention and Control Program
HWM	Hospital Waste Management
IBTS	Institute of Blood Transfusion Services
KPK	Khyber Pakhtunkhwa
MICS	Multiple Indicators Cluster Surveys
MIS	Malaria Indicator Surveys
MNCH	Maternal, Neonatal and Child Healthcare Program
MSM	Men Who Have Sex with Men
NGOs	Non-government organizations
NHSF	National Hepatitis Strategic Framework
NHSRC	National Health Services, Regulations and Coordination
PACP	Punjab AIDS Control Program
PHAP	Punjab Hepatitis Action Plan
PHC	Punjab Healthcare Commission
PHIA	Population-based HIV Impact Assessment
PHRC	Pakistan Health Research Council
PITB	Punjab Information Technology Board
PKLI	Pakistan Kidney and Liver Institute
PMRC	Pakistan Medical Research Council (Now called Pakistan Health Research Council-PHRC)
PWID	People who Inject Drugs
SDG	Sustainable Development Goals
SME	Subject Matter Experts
STI	Sexually Transmitted Infection

TAG	Technical Advisory Group
TWGs	Technical Working Groups
VH	Viral Hepatitis
WHA	World Health Assembly
WHO	World Health Organization

EXECUTIVE SUMMARY

Viral Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infections are major public health challenges worldwide, affecting 328 million people globally i.e. 257 million people are living with chronic HBV infection and 71 million with HCV infection. The Eastern Mediterranean (EMR) presents high prevalence of HBV (3.3%) and HCV (2.3%). In 2015, it was estimated that 15 million are chronically infected with HCV and 21 million are infected with HBV. If the number of people living with hepatitis remains at the current high levels for the next 40-50 years, it is estimated that a cumulative 20 million deaths will occur between 2015 and 2030; therefore, a stepped-up global, regional, national and provincial response can no longer be delayed.

World Health Organization (WHO) has developed the Global Health Sector Strategy (GHSS) for Viral Hepatitis (VH) 2016–2021 that contributes to the achievement of the 2030 agenda for Sustainable Development Goals (SDGs). The strategy addresses all five hepatitis viruses (hepatitis A, B, C, D and E), with focus on hepatitis B and C. The strategy describes the contribution of the health sector in combating viral hepatitis towards its elimination as a public health threat by 2030. The WHO Eastern Mediterranean Regional Office (EMRO) developed a Regional Action Plan 2017-2021 for the implementation of the GHSS for Viral Hepatitis (VH). The regional action plan is intended to guide the Member States and the WHO secretariat on a roadmap towards the achievement of national, regional and global targets.

Pakistan has a high disease burden of hepatitis A to E, with maximum morbidity in hepatitis A & E and maximum morbidity and mortality in hepatitis B, C and D. HBV and HCV are major public health threats in Pakistan affecting almost 15 million people across the country. Within Pakistan the province of Punjab bares the highest disease burden of hepatitis B and C among all other provinces. Recently, the Government of Punjab has carried out a seroprevalence survey during 2017- 2018 in Punjab where prevalence of anti HCV was raised from previous figure of 6.7% (in 2008) to 8.9% (in 2018) and prevalence of HBsAg was slightly reduced from 2.4% (in 2008) to 2.2% (in 2018).

Recognizing the enormity of the problem and working towards achieving the WHO global elimination targets by 2030, Pakistan has developed its National Hepatitis Strategic Framework (NHSF) for Hepatitis response 2017-2021 through a participatory process with the involvement of Provincial hepatitis programmes, Federal and Provincial partners, including private sector and

NGOs. The NHSF was launched on October 08, 2017 in Islamabad where Ms. Sara Afzal Tarar (Federal Minster of National Health Services, Regulations and Coordination), Dr. Tedros Adhanom Ghebreyesus (Director General World Health Organization), Dr. Mahmoud M. Fikri (Regional Director World Health Organization Eastern Mediterranean Region), Mr. Muhammad Ayub Sheikh (Secretary, NHSRC) and Health Ministers of Palestine, Sudan, Afghanistan, Somalia, Libya, Kuwait, Yemen and Qatar honored the event with their valued presence. A declaration was signed by the Federal Minister NHSRC and all the Provincial Health Authorities in which they pledged to implement this NHSF all over the country by developing and employing the Provincial Hepatitis Action Plans in all provinces to achieve WHO targets of hepatitis elimination by 2030.

As a next step towards that declaration, Punjab was the first province that developed the Punjab Hepatitis Action Plan (PHAP) 2019-21. The vision of PHAP (2019-21) is that "In Punjab; viral hepatitis transmission is halted and everyone living with viral hepatitis has access to safe, affordable and effective prevention, care and treatment services". The PHAP goals and targets have been aligned with the SDGs for 2030 and the WHO global goals and targets. This takes into account the Punjab context, including the nature and dynamics of the province viral hepatitis epidemics, populations affected, structure and capacity of the health care and community systems, and the resources that can be mobilized.

Five strategic objectives have been set up to implement the priority areas that have emerged from the epidemiological situation of viral hepatitis and its current provincial response. These include;

1. **Strategic objective 1:** To strengthen the availability, sharing and utilization of strategic information that will guide the development and implementation of evidence based-informed policies and strategies
2. **Strategic objective 2:** To Strengthen leadership and coordination for the implementation and monitoring and evaluation of an effective, integrated, multisectoral response to hepatitis
3. **Strategic objective 3:** To strengthen the quality and scale up coverage and utilization of hepatitis B and C prevention services
4. **Strategic objective 4:** To improve the quality and scale up coverage and utilization of the comprehensive Hepatitis B and C testing and diagnostic services

5. **Strategic objective 5:** To improve the quality and scale up coverage and utilization of the comprehensive Hepatitis B and C treatment services

The strategic objectives are translated into key interventions and priority actions for clear strategic directions to eliminate viral hepatitis from Punjab. An operational plan comprising a set of activities for each action is an integral part of this PHAP. To monitor progress in the implementation of the operational plan, Monitoring and Evaluation results framework has been developed. Implementation of the PHAP needs a strong monitoring and evaluation system to generate the best possible data on the viral hepatitis situation, including trends and responses, and to monitor the hepatitis response through a set of standard and measurable indicators.

ACKNOWLEDGEMENTS

We are sincerely grateful to all the health professionals with varying backgrounds and specialties as well as the Civil society representatives who have contributed to the development of this "Punjab Hepatitis Action Plan (PHAP) 2019-21" for Punjab, Pakistan.

PHAP Development Group

The PHAP Development Group was led by Dr. Khalid Mahmood, Program Manager, Punjab Hepatitis Control program.

Dr. Hamida Khattabi was hired as a consultant to develop the PHAP.

One Provincial Technical Working Group (TWG) was formulated to develop the PHAP that was comprised of the following members.

1. Dr. Khalid Mahmood (Program Manager, Punjab Hepatitis Control program)
2. Dr. Hamida Khattabi (WHO International Consultant)
3. Dr. Hassan Mahmood (WHO National Consultant)
4. Ms. Joumana Hermez [WHO Regional Advisor on HIV, AIDS and Sexually Transmitted Infections (HAS)]
5. Dr. Safdar Kamal Pasha (WHO National professional Officer)
6. Mr. Ahmed Sabry (WHO HAS Consultant EMRO)
7. Dr. Irfan Ahmed (WHO Consultant)
8. Dr. Maheen Sayed (Deputy Program Manager, Punjab Hepatitis Control program)
9. Dr. Aminah Khan (Deputy Program Manager, Punjab Hepatitis Control program)
10. Dr. Yadullah (Deputy Program Manager, Punjab Hepatitis Control program)

Overall coordination

Dr. Hamida Khattabi, Dr. Hassan Mahmood, Dr. Safdar Kamal Pasha and Dr. Irfan Ahmed

Finalization of the document:

Dr. Khalid Mahmood took the lead on the finalization of the document along with Punjab Health Department, Punjab Hepatitis Control program Punjab Hepatitis Steering Committee and all the stakeholders working on hepatitis control in the province. The document was endorsed by all the partners in the Provincial Consensus Workshop held on May 02 2019 in Lahore.

Dr. Hamida Khattabbi and Dr. Hassan Mahmood provided strong technical inputs in the development, finalization and consensus building of this document.

1.INTRODUCTION

1.1 Background

Pakistan is facing an epidemic of Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) infections. A National Hepatitis B and C Seroprevalence Survey in 2008 showed 2.5% prevalence of hepatitis B and 5% prevalence of hepatitis C infections among general population. [1] All the five types of viral hepatitis (A, B, C, D, and E) are prevalent in Pakistan but Hepatitis A and E produce the highest morbidity while hepatitis B and C contribute to highest morbidity and mortality and thus account for a considerable disease burden in the country. [2, 3] Most of the people infected with HBV or HCV are not aware of their infection status resulting in delayed diagnosis and treatment. [4] Delayed diagnosis can result in sequels such as cirrhosis, decompensated chronic liver disease (DCLD) and hepatocellular carcinoma (HCC), ultimately increasing the disease burden for a poor resource country like Pakistan. [4]

At the National level, Pakistan launched a National Hepatitis Strategic Framework (NHSF) in the year 2017 to provide clear strategic guidance to the provinces to achieve the global targets of eliminating hepatitis by 2030, in line with the Global Health Sector Strategy (GHSS) for Viral Hepatitis developed by the World Health Organization (WHO). [5, 6] The NHSF gives clear national diagnosis and treatment targets to eliminate hepatitis from the country. [5, 6] At the launching ceremony of NHSF, the provinces signed a declaration and made commitment to develop their provincial hepatitis action plans for the effective implementation of NHSF in the country. Punjab is the first province to take the lead in developing the Punjab Hepatitis Action Plan in collaboration with Pakistan Health Research Council (PHRC), World Health Organization (WHO) and Division of Viral Hepatitis (DVH) of US Centers for Disease Control and Prevention (CDC).

Punjab is the most populous of the four provinces of Pakistan with a population of almost 110 million people. [7] The preliminary analysis of the seroprevalence survey conducted in 2018 by Punjab Government indicates that HBsAg prevalence among general population as 1.9%, which can be translated to approximately 2 million people infected with chronic HBV; while the prevalence of anti HCV antibodies among the general population was 9.8%; translated to approximately 10.8 million affected by the HCV.[8]

Hepatitis Prevention and Control Program (HPCP) Punjab was launched in the year 2009.[9] The program is aims at systematically providing evidence-based prevention, control and treatment interventions to achieve elimination of hepatitis virus infection in Punjab. It strives to improve access to quality diagnostic services and effective hepatitis B&C case management in the public sector health facilities. Furthermore, the program is working to reduce morbidity and mortality due to Hepatitis B and C by improving hospital waste management, infection control and injection safety practices in public sector health facilities, including strengthening of the existing infrastructure and support system at Provincial and District level. [9]

The Punjab Hepatitis Control Program deals only with the public health facilities; however, the Government of Punjab has formulated Punjab Healthcare Commission (PHC) to ensure the good quality clinical services in both public and private health care settings. The PHC is an autonomous health regulatory body that aims to improve the quality, safety and efficiency of healthcare service delivery for all Public and Private Healthcare Establishments (HCEs) including Allopaths, Homeopaths and Tibbs in the province of Punjab. The PHC is responsible for developing and enforcing Minimum Service Delivery Standards (MSDS) at all levels of healthcare, to improve the quality of healthcare services and foster a culture of Clinical Governance. All Healthcare Establishments are required to implement Minimum Service Delivery Standards (MSDS) to acquire a License to deliver healthcare services in Punjab. [10]

1.2 Punjab Demography and Health Profile

Punjab (literally meaning: "Land of Five Rivers") is the most populous province, with an estimated population of 110,012,442 as of population census of 2017, hosting about 53% of the country's residents. [7, 11] Punjab is Pakistan's second largest province after Balochistan with an area of 205,344 square kilometers (79,284 square miles) which represents 25.8% of the total area of Pakistan [11]. Punjab has 36 districts with Lahore being the largest city and provincial capital. [7, 11, and 12]

To the North of the Punjab is the Khyber Pakhtunkhwa (KPK) Province and the federal capital area of Islamabad, to the North-East is Azad Kashmir, to its South-East is India (Indian Punjab & Rajasthan), to the South-West is the province of Sindh while to the West are Baluchistan and the Federally Administered Tribal Areas (FATA) [12]. All the major rivers of the country namely Indus, Jhelum, Chanab, Ravi, & Sutlaj flow through this province. They originate from the

Himalayas and pass from North-West to South-West. They are primeval in nature and the volume of water increases in the summer after the monsoon rains, resulting sometimes in floods [12].

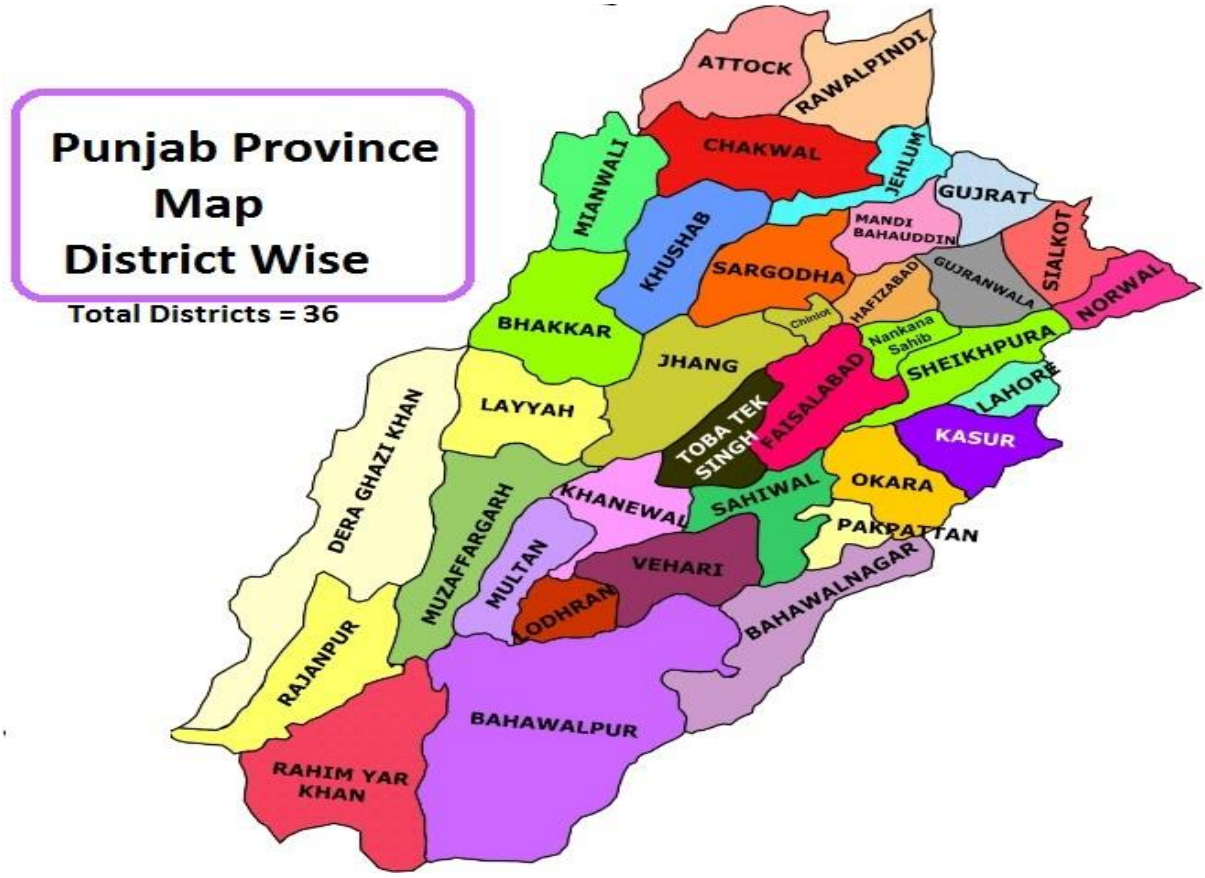


Figure 1. Punjab Province Map [13]

Punjab's economy is mainly agricultural, although industry makes a substantial contribution [14]. The province is playing a leading role in agricultural production. It contributes about 68% to annual food grain production in the country. 51 million acres is cultivated and another 9.05 million acres are lying as cultivable waste in different parts of the province [14]. There are different pockets of industrial clusters spread across Punjab. The industrial establishments in Punjab comprise of a multitude clusters that variate in terms of geographical location, historical backgrounds and competitive labor skills. Over all Industrial Structure of Punjab is a combination of different industrial Small and Medium-Sized Enterprises (SMEs) Clusters. The SME Clusters in Punjab have huge potential for development that is critical to industrial growth of the province [14].

The literacy rate has increased greatly to 61% over the last 40 years [15]. Punjab has the highest Human Development Index out of all of Pakistan's provinces at 0.732 [16]. The fertility rate is 3.4 in Punjab and 6% of the teenagers (15-19 years old females) had begun childbearing [17].

Punjab health department is divided into two departments (1) Primary & Secondary Health Department Punjab and (2) Specialized Healthcare and Medical Education Punjab. As the name indicates Primary & Secondary Health Department provides primary and secondary level healthcare services and is comprised of 2505 basic health units, 317 rural health centers, 125 tehsil (sub district) head quarter hospitals and 26 districts headquarter hospitals [18]. Specialized Healthcare and Medical Education provides the tertiary care level health services and is comprised of 45 Teaching/ tertiary Care Hospitals, 6 Medical Universities, 14 Medical Institutes / Colleges and 56 Nursing Schools [19].

Women in Punjab (92%) are more likely to receive antenatal care from a skilled provider and to receive more than four antenatal care visits as compared to other regions of the country [17]. Children in Punjab (80%) are more likely to receive all basic vaccinations with 90% of the children receiving third dose of hepatitis B vaccine as part of routine immunization schedule [17]. The birth dose of hepatitis B vaccine was recently introduced in 2017 by Government of Punjab [20].

1.3 Developing the Punjab Hepatitis Action Plan (PHAP)

After the launch of NHSF in 2017 at federal level, the next step was to develop the provincial hepatitis action plans (in all provinces) for its effective implementation. Punjab has become the first province in the country in developing its provincial hepatitis action plan. Hepatitis prevention and control program (HPCP) Punjab requested PHRC, WHO and DVH-CDC to support the development of Punjab Hepatitis Action Plan (PHAP).

In Punjab as in the whole country most of the population has been exposed to hepatitis A (childhood) or E (adulthood) as acute infections, though, both viruses have relatively low to moderate morbidity and mortality. However, the province is facing considerable epidemics of hepatitis B, C. Recognizing the enormity of viral hepatitis B and C as a public health in Punjab as in Pakistan, it has been decided to focus on viral hepatitis B and C in both National Hepatitis Strategic Framework (NHSF) and the Punjab Hepatitis Action Plan 2019-20121. However, to address water borne hepatitis A and E, it is important that the province continue implementing the

disease control measures to prevent them, including surveillance and early warning systems, safe water and sanitation along with promotion of hygiene and vaccination are put in place.

The HPCP Punjab was leading the whole process of the development of the PHAP and was technically supported by WHO and CDC.

A Technical Working Group (TWG) was formulated and an International Consultant was hired to develop the PHAP. TWG was comprised of Punjab Hepatitis Program Manager and the program team, International Consultant, WHO HIV, AIDS and Sexually Transmitted Infections (HAS) advisor and the HAS 'consultant Eastern Mediterranean Regional Office, National Professional Officer WHO Country Office, Provincial Consultant WHO Punjab and WHO National Consultant on Viral Hepatitis.

Extensive literature search was conducted by the TWG members who have used the relevant country specific topics in different sections of the action plan with proper references.

A Consultative and participatory approach was adopted. In this respect the PHCP organized a stakeholders meeting in September 2018 that played a key role in the development of Punjab Hepatitis Action Plan. The stakeholders included gastroenterologists, clinician, Subject Matter Experts (SME) and public health experts from Provincial health departments, safe blood transfusion program, Punjab AIDS Control Program (PACP), Maternal, Neonatal and Child Healthcare Program (MNCH), Expanded Program on Immunization (EPI), Pakistan Kidney and Liver Institute (PKLI), academicians, researchers and non-government organizations (NGOs). The stakeholders meeting was a very important step in the process of the development of PHAP. It gave the opportunity to the stakeholders to; i) discuss and complete the information on the hepatitis situation and response, challenges and opportunities in Punjab ii) set key priorities taking into consideration the province context and the national priorities identified by the NHSF iii) set targets of the PHAP taking into consideration the province context and the national targets proposed by the NHSF iv) identify and discuss the strategic objectives to achieve the provincial targets and v) identify and agree on key priority interventions and actions of the PHAP.

A draft PHAP was developed based on the main outcomes of the stakeholders meeting and was shared with the TWG. Key recommendations from the TWG have been incorporated in the final draft.

A Steering Committee (SC) was formulated by Punjab Health Department to oversee the hepatitis prevention and control activities in Punjab. The draft of the PHAP was presented and discussed in the steering committee meeting organized by the PHCP on May 02, 2019 in Lahore to receive the feedback of the committee on the draft PHAP.

Based on the recommendations of the steering committee meeting, the PHAP has been finalized and endorsed by the Punjab Health Departments and the Federal ministry of NHSRC.

1.4 Limitations of the development of the PHAP

The hepatitis surveillance system is weak. Provincial data lack information from the private health sector in terms of number of HBV and HCV cases diagnosed and treated in private health sector. There was also dearth of recent Punjab specific data on the epidemiology of Hepatitis B and C, therefore, some old studies were included to quote the figures and facts. Furthermore, there were no data available at all on the cause of mortality because it is not recorded in both public and private sectors. Accordingly, the PHAP is based on limited public sector data provided by the HPCP Punjab. More accurate data on morbidity and mortality are needed for the implementation of high-impact and targeted interventions.

2. EPIDEMIOLOGY OF HEPATITIS B & C IN PUNJAB

Viral hepatitis B and C infections are major public health challenges worldwide, affecting 328 million people globally i.e. 257 million people are living with chronic HBV infection and 71 million with HCV infection [21, 22]. Chronic HBV and HCV infections are root causes of liver cancer, leading to 1.34 million deaths every year [21, 22].

The Eastern Mediterranean (EMR) presents high prevalence of HBV (3.3%) and HCV (2.3%). In 2015, it was estimated that 15 million are chronically infected with HCV and 21 million are infected with HBV [21].

In Pakistan, all five hepatitis viruses (A, B, C, D and E) are endemic. Most of the population has been exposed to hepatitis A (childhood) or E (adulthood) as acute infections, however, both viruses have relatively low to moderate morbidity and mortality [3]. On the other hand the country is facing considerable epidemics of hepatitis B, C and D [23]. Pakistan suffers from the highest HCV disease burden within the Eastern Mediterranean Region (EMR) and the second highest globally after China as shown in Figure 2.

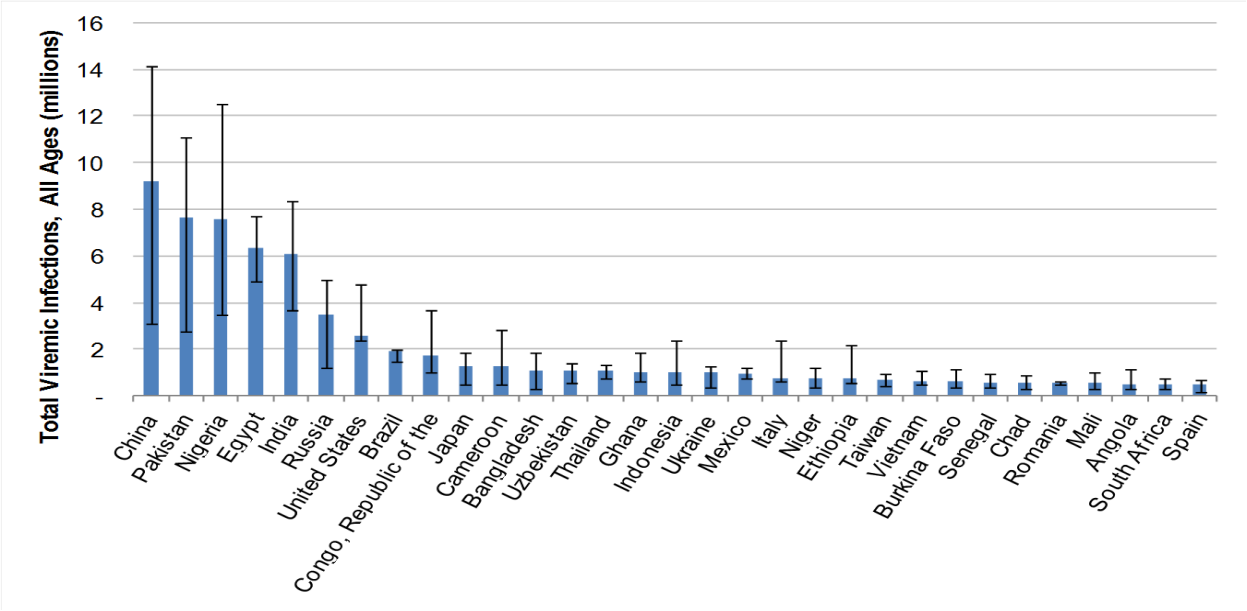


Figure 2: HCV disease Burden worldwide

Within Pakistan the province of Punjab bares the highest disease burden of hepatitis B and C among all other provinces (Figures 3 & 4). Based on the results of the national survey back in 2008, it was estimated that Punjab contributes to 70- 75% of the Hepatitis C, and approximately 52% of hepatitis B infection pool in Pakistan. [1]

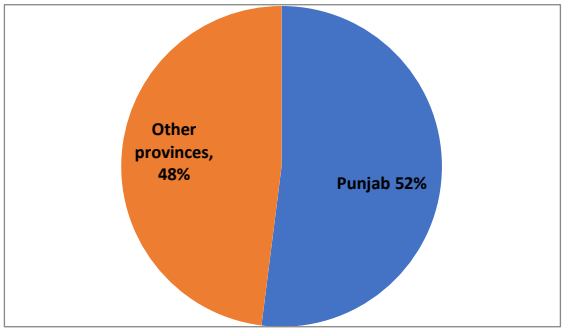


Figure 3: Burden of Hepatitis B in Pakistan. 2008 Data

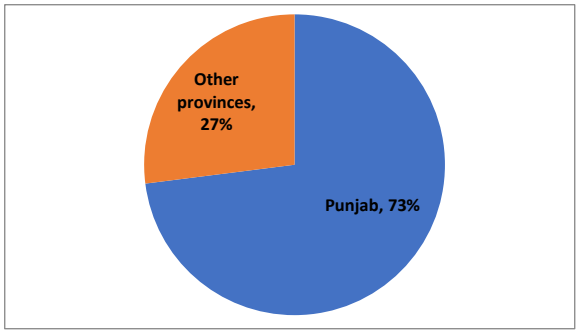


Figure 4: Burden of Hepatitis C in Pakistan. 2008 Data

In Pakistan the first and only nationwide survey was conducted on prevalence of hepatitis B and C in all over Pakistan by Pakistan Medical Research Council (now known as Pakistan Health Research Council) in 2008 [1]. The survey revealed that the country has a national prevalence of 2.5% of chronic HBV infection and prevalence of 5% of anti-HCV antibodies among general population [1].According to the survey, within the provinces the hepatitis B was high in Balochistan (4.3%) while it was 2.5% in Sindh, 2.4% in Punjab and 1.3% in Khyber-Pakhtunkhwa (KPK). For HCV the antibody prevalence was highest in Punjab (6.7%) followed by Sindh (5.0%), Balochistan (1.5%) and KPK (1.1 %) [1]. Recently, the Government of Punjab has carried out a seroprevalence survey during 2017- 2018 in Punjab where prevalence of anti HCV was 8.9% and prevalence of HBsAg was 2.2%. In this action plan, most of the epidemiology data have been taken from the 2008 data of National Hepatitis Survey and preliminary data analysis report of Punjab Hepatitis Survey 2018

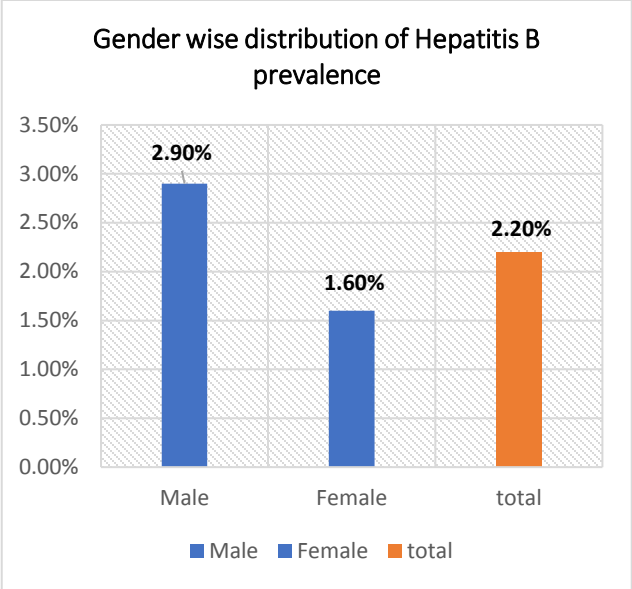
2.1 Epidemiology of HBsAg in Punjab

2.1.1 Prevalence in the general population (geographical distribution)

The final analysis of the sero-prevalence survey conducted in 2018 indicates that prevalence of chronic HBV infection among general population is 2.2%, which can be translated to approximately 2 million people chronically infected with HBV in Punjab [8]. While HBV prevalence has slightly decreased in the province as a whole since 2008 survey (2.4% to 2.2%), more than a third of the districts have shown significant increase [1,8].

2.1.2 Prevalence of HBsAg by age, gender and residence in Punjab

Results from 2018 survey show that higher HBsAg prevalence is noted among males (2.9%) more than females (1.6%) and a slightly higher prevalence is noted in rural areas more than urban areas (Figure 5) [8]. Looking into the age distribution of HBsAg prevalence, the highest prevalence of HBsAg was seen in age group 70 years and above (4.6%) as well as a peak prevalence was noted among age group 40-49 years (3.8%), while the lowest prevalence was among the youngest age group 1-4 years of age (0.3%). as shown in figure 6 [8].



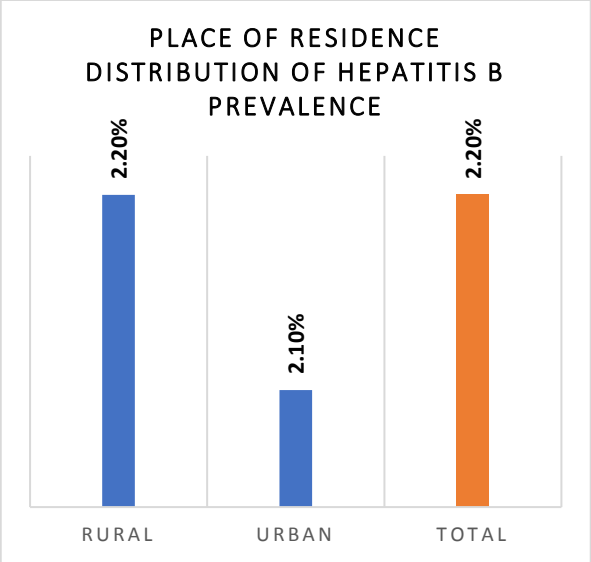


Figure 5: Prevalence of HBsAg by Residence and Gender in Punjab

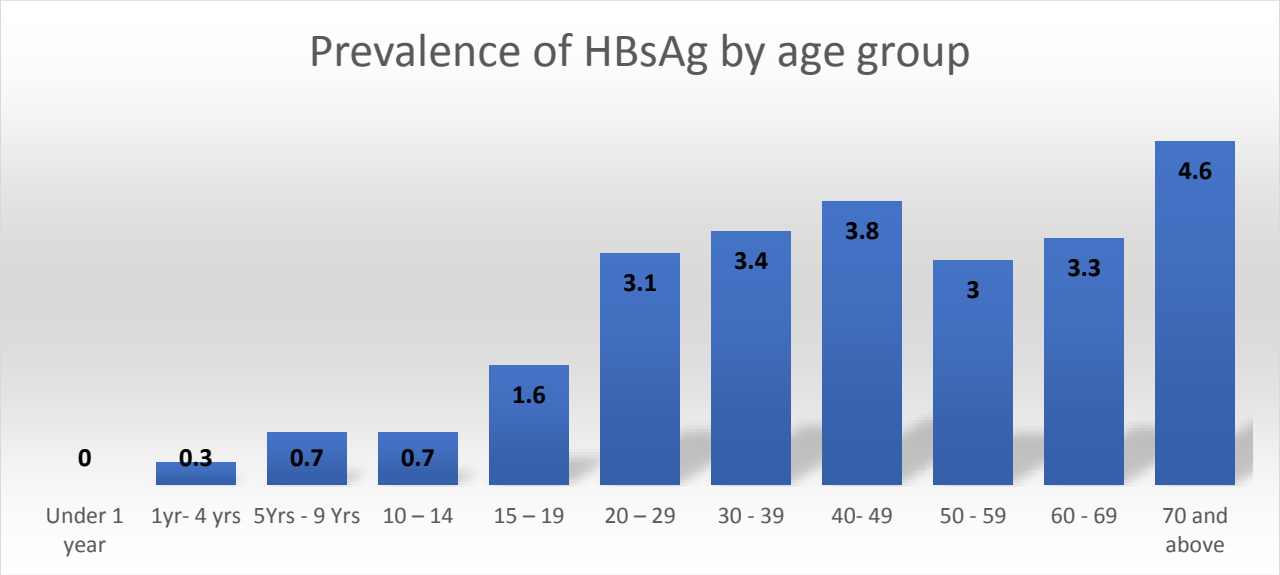


Figure 6: Age wise Distribution of HBsAg Prevalence (%) in Punjab

2.2 Epidemiology of anti HCV in Punjab

2.2.1 Prevalence in the general population (geographical distribution)

The final findings of Punjab Hepatitis Survey 2018 were very alarming where the prevalence of anti HCV among the general population is 8.9%; translated to approximately 7-8 million chronically infected with the virus [28]. Chronic HCV prevalence in the province of Punjab has increased since 2008 where the prevalence was 6.7% [1].

2.2.2 Prevalence of anti HCV by age, residence, gender and marital status in Punjab

Data from 2018 survey indicates that higher HCV prevalence is noted among females (9.1%) more than males (8.8%). Prevalence of HCV is higher in rural areas when compared to urban areas (figure 7) [8]. All the age groups above 30 showed a very alarming prevalence of HCV antibody prevalence between 15% and it goes up to 24%. The highest prevalence was noted among age group 70 years and above followed by age groups between 40-60 years old where prevalence was around 20% as shown in figure 8. The lowest prevalence was noted among the younger population and the prevalence ranged between 0.6 to 3% in the younger population between 0-20 years old. [8]

High anti HCV prevalence was seen among notably high among females who had a partner or underwent marriage compared to unmarried females. Prevalence of anti HCV prevalence among widowed was 2.8%, followed by 18% prevalence among married while it was below the general population prevalence in single females (6.8%) as shown in figure 9.[8]

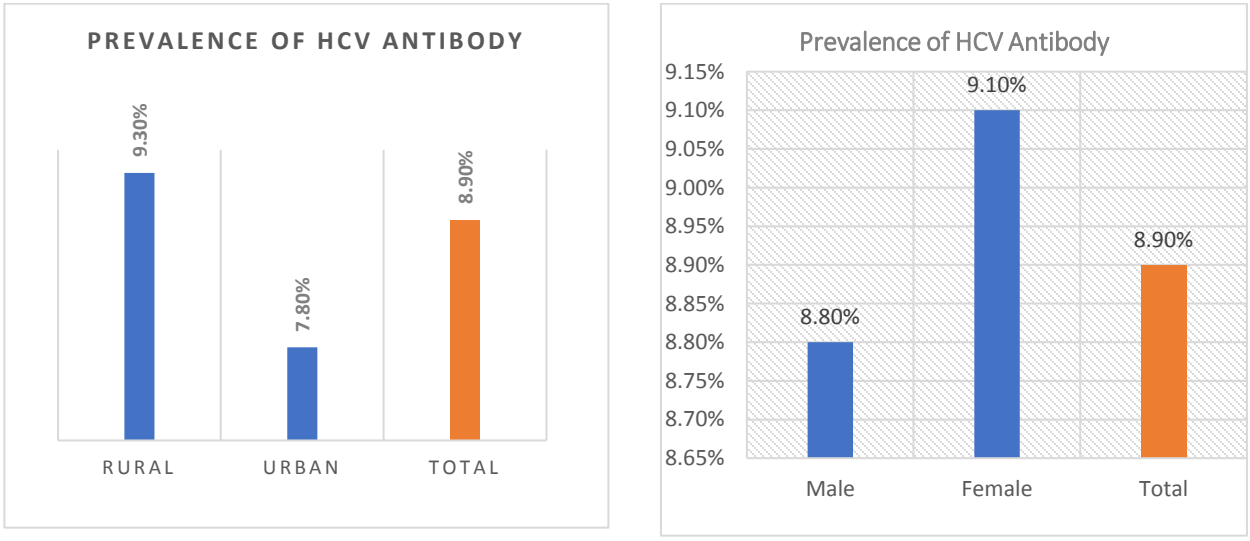


Figure 7: Prevalence of anti HCV by Residence and Gender in Punjab

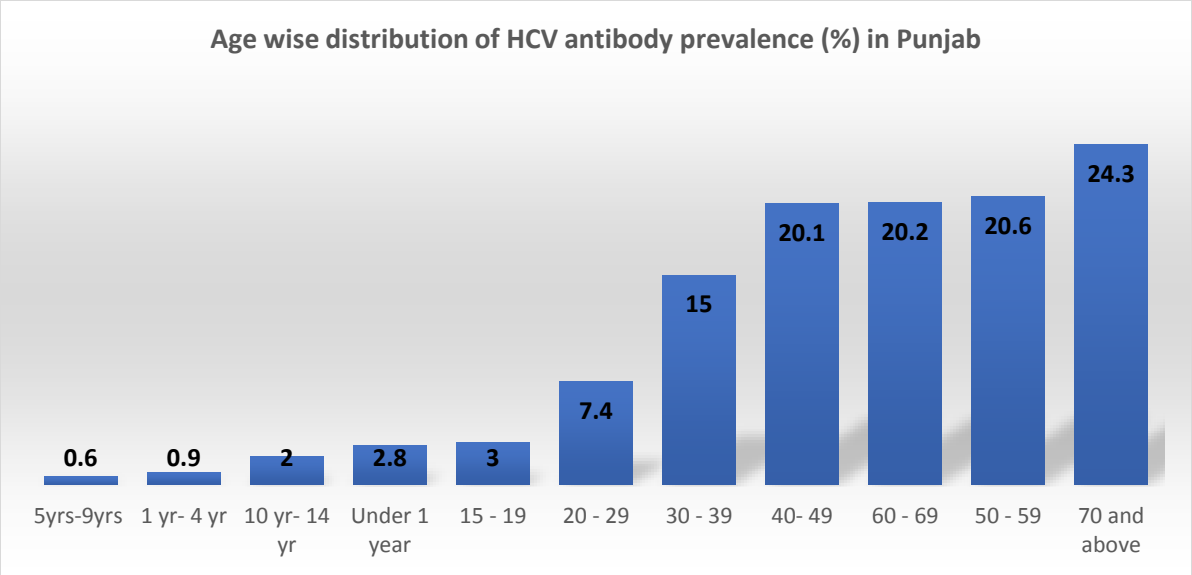


Figure 8: Age-wise Distribution of anti-HCV Prevalence (%) in Punjab

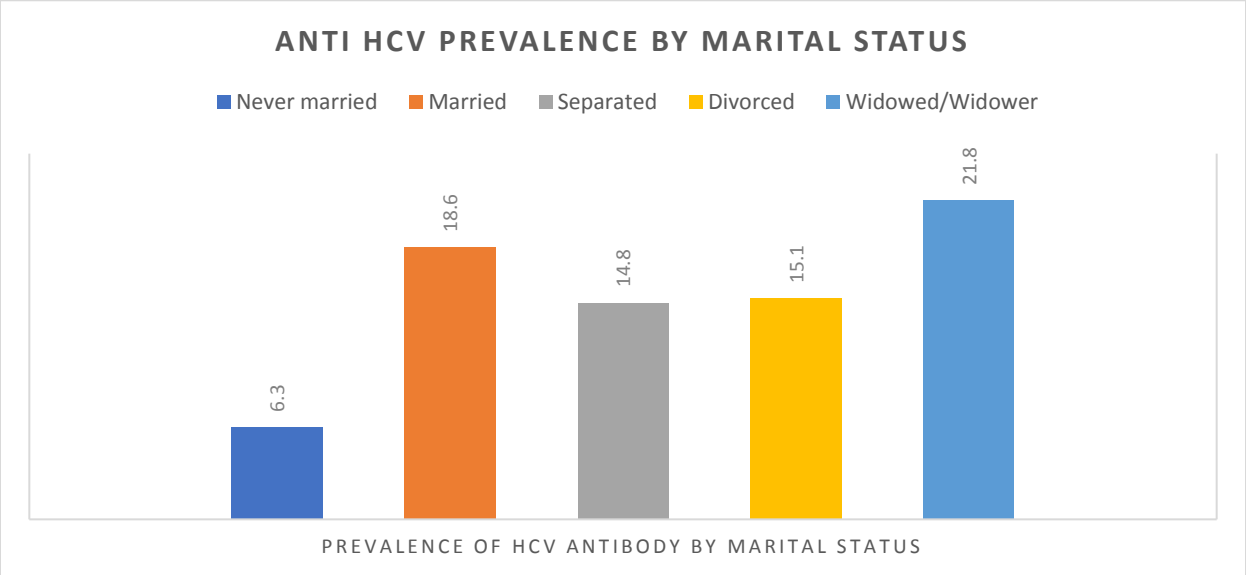


Figure 9: HCV Prevalence (%) as per Marital Status

2.3 Risk factors for HBV and HCV in Punjab

Risk factors for both HCV and HBV studied in the literature appears to be primarily driven by healthcare-related exposures, such as therapeutic injections, intravenous infusions and poor sterilization of medical equipment, blood safety as well as injecting drug use.[24,25,26,27]

Multiple risk factors for acquiring HBV and HCV were studied in the 2018 seroprevalence survey including: injection drug use, history of receiving a blood product transfusion, surgical operations, dental treatment including replacing tooth, piercing, body tattooing and others. [8]

History of injection (Needles in healthcare settings)

Unnecessary injections are given commonly in Pakistan out of the prevalent view in the population that injected medicines are more effective than oral medications.[28, 29] Injections in healthcare settings are well described in the literature as a major mode of transmission of both hepatitis B and C in Pakistan. [30, 31] Results of the 2018 survey showed association of history of injections and the risk of acquiring HBV and HCV infection among the study participants. Approximately 60% of the HBV reactive respondents and 66% of HCV reactive respondents had been using injections for therapeutic purposes at least once.

Recipients of blood and blood products

There are about 1.5 million units of blood products transfused each year in Pakistan. [32] Fifty percent of blood banks regularly utilized paid blood donors and only 25% actively recruited voluntary blood donors. [33] There are 145 blood banks at Tehsil (sub-district) level in Punjab out of which only 5 are licensed that shows the compromised quality of blood transfusions. [34] In Punjab, there is lack of resources, weak framework, poor resources, untrained staff and inadequate policy implementation and in effective screening of blood donors that causes blood transfusion to be one of the main risk factors for HBV and HCV infection. [35] The 2018 survey indicated that 66 % of the reactive HBV respondents received at least one blood transfusion in the past and around 11% of those tested positive for HCV informed that they have received blood transfusion at least once during the past one year.

According to Punjab Blood Transfusion Authority, the overall prevalence of HBV and HCV infections among health blood donors is; 1.55% and 2.66% respectively.[36]

Multiple transfused populations

Unfortunately, there were no data available specific to the prevalence of HBV and HCV infections among multiple transfused populations in Punjab. However, a review article showed that in multiple transfused populations in Pakistan like thalassemia in Pakistan, the HBV figures ranged between 7.5-8.4% and for HCV they were between 36-56%. Figures in hemophilia were similarly high (HBsAg 5%, HCV 25%). In dialysis population HBV figures were 12.4% and HCV 20%. [3]

A meta-analysis was conducted by WHO/EMRO, in collaboration with Cornel University- Qatar in 2016, looking at the mean prevalence of HCV among different groups in Pakistan and very high prevalence was noted in several groups including people with medical condition that requires frequent injections or blood transfusions such as hemodialysis, thalassemia, hemophilia, and multi-transfused patients. [37]

History of hospitalization

It was reported in the 2018 survey that 74% of the HBV +ve identified people were hospitalized at least once during the past one year, and 67% of the HCV reactive respondents were hospitalized one time during the past one year, while 27% of the respondents were hospitalized 2-3 times during past one year. This imposes questions about the hospital acquired infections related to both hepatitis B and C in hospitals in Punjab.

Surgical treatment and dental care

Several studies conducted in Pakistan showed that unsterilized surgical instruments and dental tools were associated with outbreaks of blood borne viral infection in private clinics and hospitals including hepatitis B and C. [38] The 2018 Punjab survey showed that more than 75% of infected HBV patients had at least one surgical treatment within their life time. As for the dental care and treatment, 25% of infected HBV patients had one dental visit over the previous one year and 21% had gone two or three times. The association was also noticed among the HCV +ve identified where 25% had at least one dental care procedure and 19% had 2-3 times over the last year. [8] This association impose questions for the infection control practices such as the sterilization methods and the use of unsterilized surgical instruments and dental tools in hospitals and dental clinics.

Body pricking, tattooing and barber visits

Contaminated razors and equipment's for piercing and shaving used at the barbers and tattooing places can be a source of infection for both HBV and HCV. In a cross-sectional study of barbers in Rawalpindi/Islamabad showed that only 13% knew that hepatitis could be transmitted by contaminated razors. [39] In the 2018 survey, 149 (95.6%) of the HBV reactive informed that they had visited the barber and 50% of those positive for HCV reported that they had visited the barber at least once in the past year or had been pricked on various parts of the body. [8]

2.4 Prevalence of HBV and HCV infections in some key groups

People Who Inject Drugs (PWID)

Unfortunately, the National Hepatitis B and C survey and Punjab Hepatitis Seroprevalence Survey 2018 did not capture the data in key/specific populations. Only some local studies give some information in the key groups but most of these studies are done at national level rather than only for Punjab. It is estimated that there are 113,776 People Who Inject Drugs (PWID) in Pakistan. [40] PWID engage in high levels of injecting risk behaviour, specifically sharing of needles and syringes, which expose them to all blood borne infections including HCV infection. [40] According to last Integrated Biological & Behavioral Surveillance in Pakistan (IBBS) done in 2016-17, 38.8% reported always using a new syringe, 31.2 shared syringes at last injection, while 19.6% reported using a new syringe most of the time.[41] Studies among PWID in Pakistan report a high prevalence of HCV. Some studies from Pakistan concluded that the mean HCV prevalence among PWIDs is 61.8% (CI: 45.5-76.8) [42, 43, 44]. Additionally, prevalence above 90% is reported from certain areas of Karachi (94%) [42, 43, 44]. A study conducted by Association of People Living with HIV/AIDS reported 92% prevalence of HCV among PWIDs in Pakistan [42,44]. Prevalence of HBV in PWIDs was reported to be 28.5% in 2007[42, 43, 44].

A civil society organization named Nai Zindage has recently conducted a Rapid Situation Analysis (RSA) for HIV, Hepatitis B and C and other sexually transmitted diseases among PWIDs at Lahore, Sargodha and Faisalabad (3 cities of Punjab). [45] The data showed 87% HCV prevalence and 9% HBV prevalence in Lahore, 72% HCV prevalence and 4% HBV prevalence in Sargodha and 94% HCV prevalence and 4% HBV prevalence in Faisalabad among PWIDs. [45]

Transgender and Commercial sex workers

A literature review of HBV and HCV in high risk groups living in different cities of the country was conducted in 2010 [3]. It reported HBsAg infection in 12% of the commercial sex workers (women) in Lahore while it was only 3.4% among transgender in Karachi who acknowledged commercial sex with men.

2.5 Conclusion

Punjab has a high disease burden of both viral hepatitis B (2.2%) and C (8.9%). Chronic HCV prevalence in the province has increased since 2008 where the prevalence was 6.7%. Most significant risk factors associated with the increased transmission of both hepatitis B and C are healthcare related, including unsafe blood transfusions, re-use of therapeutic injections/syringes

and unsterilized medical/surgical/dental equipment. All these risk factors indicate poor implementation of safe injection practices, infection control and safe medical practices at healthcare facilities. Injecting drug use also has a significant contribution. Unsafe blood transfusion is among the most significant risk factors. Data suggested that in recent past there has been major outbreaks of HIV and HCV among general population because of unsafe blood transfusion.

Certain key groups are disproportionately affected by both hepatitis viruses compared to the general public including people who inject drugs, sex workers, hemodialysis, thalassemia, and hemophilia patients. Other risk factors including shaving at barbers' shop, tattooing, ear and nose piercing are related to community and need massive awareness campaigns to contain these risk factors.

3. PUNJAB GOVERNMENT HEPATITIS RESPONSE AND STRUCTURE

Government of the Punjab initiated intervention of Hepatitis prevention and control through annual development plan in 2005 [46]. One year later in 2006 the Federal Government initiated Prevention and Control of Hepatitis program with the cost amounting to Rs. 13904 million and Punjab share of Rs. 7241 Million [46]. After the 18th constitutional amendment the program was devolved to the province (2011) and was called as the "Chief Ministers' Hepatitis Prevention and Control Program" [6]. This Chief Minster's Hepatitis Prevention and Control Program (HPCP) Punjab was a flagship initiative of Government of Punjab, with the exclusive mandate of curbing the menacing epidemic of Hepatitis in Punjab [47].

HPCP Punjab has objectives of preventing the acute infections (vaccination), addressing the chronic infections (screening, diagnosis and treatment), raising awareness on the prevention and control of viral hepatitis, change in policy environment (promulgation and implementation of effective health policies and laws) and health system strengthening (improving the infrastructure, capacity building of the staff, improving the diagnostic and treatment services etc.) [6, 47]. HPCP Punjab is also taking care of Infection Control in Punjab and hence referred as Hepatitis and Infection Control Program (H&ICP) Punjab. H&ICP is led by a Program Manager assisted by

three Deputy Program Managers (DPMs). The organogram and structure of the HPCP Punjab is shown in the figure 10 below [48].

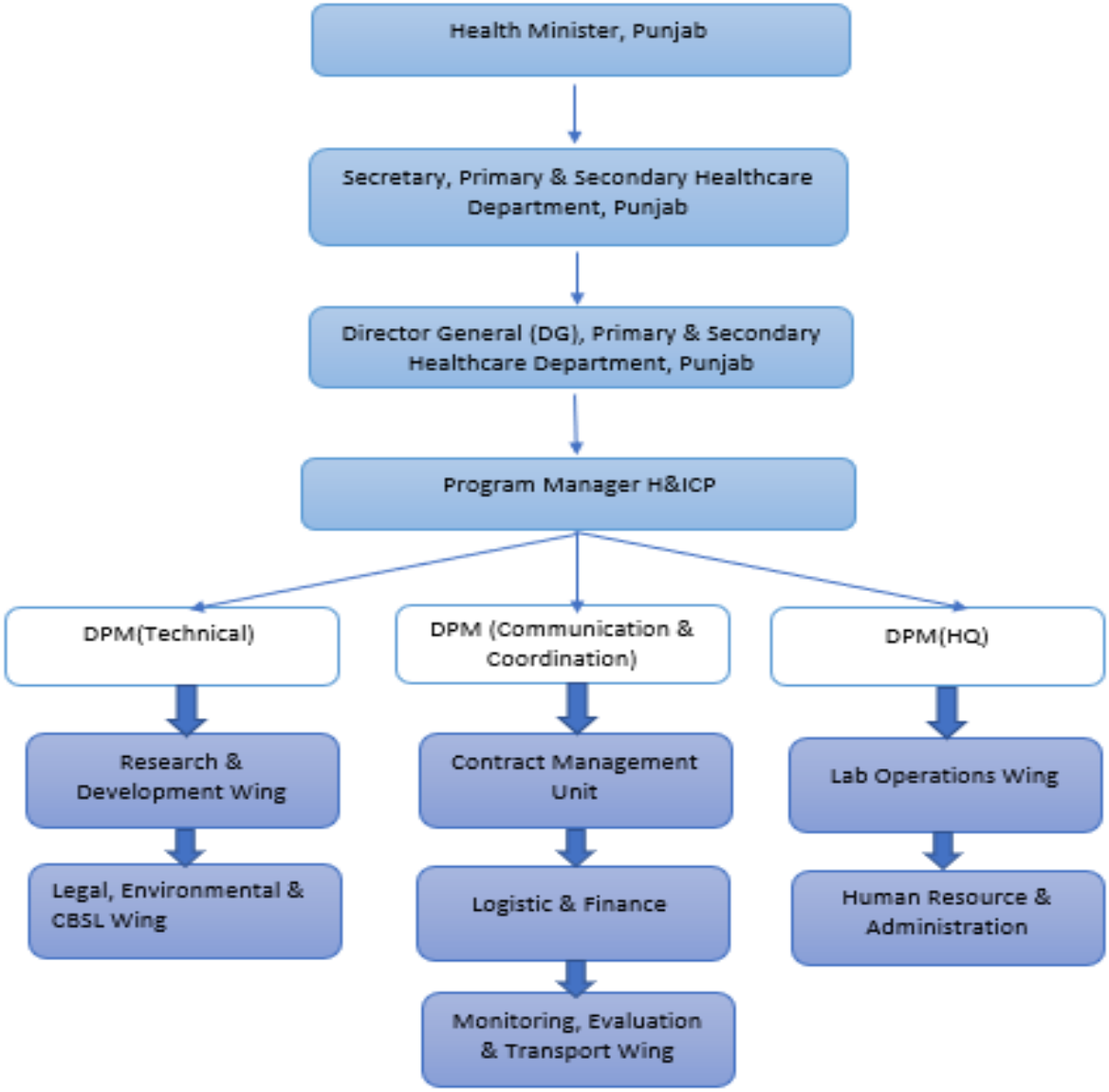


Figure 10: Organogram of Hepatitis and Infection Control Program (H&ICP) Punjab

Promulgation of the Punjab Hepatitis Act 2018 is another achievement to provide legal backstopping for prevention and control of Hepatitis in Punjab [49]. This Act was passed by the Punjab Assembly on 14 March 2018; assented to by the Governor of the Punjab on 19 March 2018; and, was published in the Punjab Gazette (Extraordinary), dated 20 March 2018, pages 6665-71 [49]. The Punjab Hepatitis Act 2018 is covering the major components of the hepatitis prevention and control. [47].

Pakistan Kidney and Liver Institute and Research Center (PKLI) when established a few years back was a promising collaboration of private and government sectors to boost health services in

the country. Recently, in 2019 the government of Punjab has integrated PKLI and specialized healthcare and medical education department with Hepatitis Prevention and Control program Punjab. This new setting is robustly fighting the lethal combination of disease and poverty to safeguard the distraught populations of Pakistan [50].

After devolution, the coordinated hepatitis response was lost both at the National and Provincial levels, therefore, on the request of the Provincial Hepatitis Control Managers, a National Technical Advisory Group (TAG) was formulated and gazette notified in 2013 under Ministry of National Health Services, Regulations and Coordination (NHSRC). TAG is chaired by the Secretary NHSRC and PHRC is its Secretariat. TAG comprises of leading gastroenterologists, provincial program managers and subject experts from National and International Organizations like WHO and DVH-CDC. Members from private sector, civil society organizations and patient group organizations are also TAG members. TAG has been very instrumental in developing the NHSF, providing technical support to National and Provincial Governments on hepatitis prevention and control, developing the National HCV Treatment Guidelines, developing the HCV treatment software, introducing the new Direct Acting Antivirals (DAAs) in the country at affordable rates which are currently the lowest in the world and also developing the Provincial Hepatitis Action Plans [6].

3.1 Hepatitis Surveillance & Monitoring and Evaluation

Patient monitoring data is maintained through live registration using the Electronic Medical Record (EMR) which was prepared in close collaboration with Punjab Information Technology Board [PITB]. The EMR provides a dashboard view that is available to each hepatitis clinic as well as centrally at the HPCP, which visualizes – among other data - the number of patient registered, number screened, number positive, number of PCR tests, number positive and number referred to care. The dashboard however does not provide SVR data that enables monitoring the outcome of treatment.

Existing disease surveillance and reporting system does not cater surveillance needs of the Hepatitis. Line listing of cases for follow-up and case response measures are neither recorded nor reported. The sentinel sites lack formal follow up mechanism for treatment compliance. There was no system available at the provincial level to track the progress of individual sentinel sites in terms of treatment provided to registered patients, cured, defaulted and information about those who

were in waiting list [46]. There is no uniform standardized monitoring, evaluation and surveillance mechanism for hepatitis at Provincial level. HPCP Punjab and PKLI are separately monitoring the patients through their separate databases which does not provide the uniform standardized data. Similarly, Field Epidemiology and Lab Training Program (FELTP) has established the sentinel sites for the surveillance of acute hepatitis in one major public sector hospital of each Provincial and one Federal capital of the country but this does not capture the data from the whole Province or from the private sector and their case definition is different from WHOs definition causing issues of usage of the data by international organizations [6]. There is a need to modify their case definition and also establish more acute and chronic surveillance sites to calculate the incidence and prevalence of hepatitis and make policy decisions.

3.2 Public Private Partnership

Public health service delivery system is catering the needs of 30-40% of total population while rest of the population fulfil their health service needs from the private sector [46]. Careful review of various diseases prevention and control models suggest that communicable diseases may only be effectively controlled through adequate public private linkages.

Public and private sector should work together in the provincial hepatitis planning and implementing the provincial response. Private sector should also be involved in monitoring and evaluation progress in the national response implementation.

3.3 Prevention

Previously (before 2017), focus was on treating a very small fraction of the population suffering from Hepatitis but unfortunately emphasis on preventive measures including infection control, waste management and injection safety was compromised and neglected due to various reasons [46].

Recently, Government of Punjab has passed the Punjab Hepatitis Act in 2018 which covers all the major areas of hepatitis prevention and control [49]. These areas include robust surveillance, procurement and utilization of AD syringes, registration and sensitization of barbers and beauticians, safe blood transfusions, implementation of hepatitis B birth dose, health care waste

management, infection control [49]. There is dire need to implement this act for the effective prevention and control of viral hepatitis in Punjab.

Vaccination

In Pakistan, Expanded Program on Immunization (EPI) was launched in 1978 [51]. All vaccines in EPI are given using auto-disable syringes. In 2002, the program introduced hepatitis B vaccine with support from the Global Alliance for Vaccines and Immunization (GAVI) as a monovalent vaccine. In 2006, a tetravalent vaccine comprising of diphtheria, tetanus, pertussis (DTP3) and hepatitis B vaccine was introduced replacing monovalent hepatitis B vaccine [49]. Later in 2008-09, pentavalent vaccine (DTP-Hep B-Hib) with the addition of the new Hemophilus influenza b (Hib) vaccine was introduced. Pentavalent vaccine is given to the infants at age 6, 10 and 14 weeks [30] but studies have shown a 56% coverage of all three doses of hepatitis B vaccine [51, 52].

In Punjab, Hepatitis B vaccination was introduced in EPI program as pentavalent vaccine (DTP-Hep B-Hib) in 2009, administered on 6^{th}, 10^{th} and 14^{th} week to newborn baby, which is contributing in developing immunity against Hepatitis B in children. Since the introduction of Hepatitis B dose in routine EPI till 2014 the total coverage was only 49%, which reflect the challenging situation regarding overall EPI and particularly Hepatitis B vaccination in Pakistan. It is hence presumable that a significant number of children might not have been fully covered through EPI program especially for districts having high prevalence of Hepatitis B [47].

By September 2018, HPCP Punjab has prescribed 424,321 doses of adult hepatitis B vaccination; out of which 270,343 patients have received first dose of HBV vaccine, 161,918 have received second dose and 59,942 have received third dose of the vaccine [53]

Birth Dose of Hepatitis B Vaccine

Many infections are acquired early in life; perinatally, or horizontally during early childhood, particularly in regions of high endemicity where these routes are the most common modes of HBV transmission [47]. This has important implications for disease prevention and control as the likelihood of developing chronic infection is higher at younger ages:

1. 90% if infected at birth;

2. 25%–50% if infected between the ages of one to five years, and
3. 5%–10% if infected over the age of five years

Vaccination against HBV has proved to be an important tool in preventing transmission of the virus. Typically given in a series of three doses, the vaccine provides protection from infection in more than 95% of healthy infants, children and young adults. In infants born to infected mothers, vaccination reduces the likelihood of developing HBV infection by 3.5 times [47].

In line with the importance of the timing of Hepatitis B vaccination, in 2009, WHO recommended that all infants worldwide receive a birth dose as soon as possible after birth, preferably within 24 hours.

After several consultative meetings of technical committee and experts, it was decided to procure and implement Hepatitis B birth dose [47]. The birth dose was launched on 31 July 2017 and distributed in 36 districts on 10 August 2017. Implementation started in First week of September in 36 districts.

By September 2018, **1,580,000 Hepatitis B Birth Doses have been administered across all 36 Districts of Punjab** [53].

Punjab Infection Control Program

Punjab infection control program is also an integral part of HPCP Punjab and is implemented by HPCP Punjab which is a good opportunity for an integrated response. Therefore, HPCP Punjab is also referred to as Hepatitis and Infection Control Program (H&ICP) Punjab. The Punjab Infection Control Program (ICP) is a three-year program that began in 2016. The program covers a range of components that will reduce infection spread. These components comprise of health care waste management specifically infectious waste, prevention and control of healthcare acquired infections and Anti-microbial resistance. The Program intends to address those issues through health systems strengthening, health promotion, Capacity building and operational research. Current partners in this program are Punjab Health care Commission (PHC), Blood transfusion Authority (BTA), Environment Protection Agency (EPA) and World Health Organization (WHO) [54]. Punjab Healthcare Commission (PHC) has the mandate and can play a very important role in ensuring good quality infection control services at all the health care facilities of public and private sectors.

In Hospital Waste Management (HWM), the program developed standard operating procedures (SOPs) keeping in view the Hospital Waste Management (HWM) rules developed by Punjab Environment Protection Agency in 2014. [55] Under these rules, the program was able to develop facility level Infection control committees, which are dedicatedly working to ensure proper segregation of waste and other infection control measures. The program trained 327 master trainers who in return conducted step -down training. Color coded bins for all health care facilities in 36 districts were procured and distributed. Sharp containers were also provided to all healthcare facilities [54].

The outsourced agency for infectious waste management got on board after passing through the competitive process. 37 branded yellow vehicles procured and handed over to the outsource partners for collection of infectious waste from Yellow rooms, the interim storage sites and its transportation to the incinerators site. Program Procured 13 incinerators in Phase 1, they were transported to installation sites and installation of these incinerators has been initiated. Thirteen (13) incinerators have also been procured for phase-2 [54]. The Infection Control Program, fully realizes the importance of waste management information system and has successfully developed tools and methodology for effective operationalization of this Management Information System (MIS). Two areas were designed for this HWM system, including: (a) locating district treatment plants (incinerators) and designing optimum travel routes for waste collection from nearby healthcare facilities; and (b) tracking waste from site of production to the site of treatment to locate any variance or pilferage.[54]

Though infection control program is striving to implement infection control but as a matter of fact, implementation of this integrated plan is a big challenge itself. A single Program cannot work in silo nor can it achieve a humongous target alone. Its requirements include having strong arms at field level, supplemented by technical support working for the same cause at provincial level. Such partnerships minimize wastage of resources and builds meaningful value for money. [54]

Primarily at the district level, the healthcare workers are not acquainted with HWM. [54] Capacities needed to be developed of those directly involved in waste segregation process. In addition to this need of dedicated provincial monitors (supervisors) and availability of dedicated infection control Officer at the district level is highly felt during the course of implementing various activities as more vigorous and regular monitoring is required for better implementation of HWM rules. [54]

The Punjab health care commission (PHC) and Environment protection agency (EPA), partners to this cause need to play their role more proactively. Regular coordination meetings with these statutory bodies have to be arranged for sharing experiences and developing a way forward accordingly. [54]

Injection Safety

Putting in place effective infection control mechanism including safe injection practices and implementing adequate mitigation of environmental hazards due to hospital waste, risk of dissemination can be reduced. As already indicated HBV and HCV are blood borne infections, with most transmission occurring through unsafe injections (62%) and unsafe medical procedures. [47]

Pakistan has the highest rate of therapeutic injections per person per year [3]. The burden of hepatitis B and C and other blood borne diseases associated with unsafe therapeutic injection practices is very high in Pakistan. The number of therapeutic injections has been estimated to be in the range of 8.2 to 13.6 per person per year, one of the highest in the developing world. Extrapolating this number to the whole country would result in 1.5 billion injections per year. Approximately 4% (75 million) of these are administered for immunization while the remainders are used for therapeutic use. Of these, 94.2% are unnecessary. infections. [56]

Facility based observations of informal and private sector suggested that 93% injections were unnecessarily prescribed and 75-94% injection equipment was reused. In public sector, 12% injections were provided with a used syringe. Unsafe injections which include an unnecessary injection and reuse of disposable syringe is the primary reason for transmission of hepatitis B and C infections.[57] Punjab Government has taken a new initiative to tackle the problem of unsafe injections by procuring auto-disabled (AD) syringes. AD syringes are designed as a single use syringe with an internal mechanism that blocks the barrel in the syringe when used the first time. Therefore, effectively preventing reuse of the syringe [47].

Procurement of **13 million** AD Syringes took place which is approximately **50%** of total to be used per year [46]. AD Syringes were distributed in all 36 districts down to the level of BHU &

RHC. Routine monitoring of AD Syringes is being done through District Health Managers by incorporation of selected indicators in Health Watch Software. Monthly report of each district is inclusively monitored by HCP team during Monthly Review Meeting [47].

By December 2017, **1,807,684 AD Syringes** have been utilized all over the Punjab [54].

Blood transfusion safety

In Pakistan, every year about 3 million units of blood are transfused (170 public and 450 private blood banks) yearly [58, 59]. Nearly 40% of these transfusions are unscreened while the rest 60% are screened mostly by sub-standard screening methods [60]. Nearly 99% of the blood donation in Pakistan are from family/replacement donors which are considered as un- safe donor population [61]. Moreover, most blood is collected by unregulated blood banks in the private sector where quality is compromised [60]. Almost 6% population suffering from thalassemia requires frequent blood transfusions all their life [6, 62]. Most of them get infected with blood borne infections including hepatitis because of poor screening and blood banking procedures [6, 62]. Though this is an overall situation in the country yet it doesn't seem to be different in Punjab because it caters more than 50% of the country's population.

In Punjab, Blood Transfusion Authority (BTA) and Institute of Blood Transfusion Services (IBTS) are responsible for ensuring safe blood transfusions [54]. It is envisaged that an effective safe blood transfusion policy would lead to prevention of new HBV and HCV cases in the province through promotion of voluntary non remunerated blood donation, optimal use of blood and blood products, quality assured blood collection and its component separation and development and practice of standards in blood banking [6].

Furthermore, under Punjab Blood Transfusion Safety Act 2016 (XLVI of 2016), mandatory screening through NAAT has been made compulsory before any transfusion in public and private sector [54]. According to Punjab Blood Transfusion Authority, there are almost 195 registered blood banks in public and private sectors of Punjab; out of which 132 (68%) are licensed. And out of total 36 District Headquarter Hospitals, 32 are licensed and of 145 tehsil (sub district) head quarter hospitals only 05 are licensed. [36]

Harm reduction

Punjab AIDS Control Programs and some civil society organizations are playing a major role in providing harm reduction services to PWIDs in Pakistan [6]. Harm reduction services have evolved in response to HIV, with the vast majority of funding coming from the Global Fund to fight HIV/AIDS, TB and Malaria. Though little attention is given to hepatitis among PWID, syringe exchange services and linkages are likely to contribute to preventing the spread of HBV and HCV in this population group. However, existing harm reduction services do not offer hepatitis testing, treatment or vaccination services. Work is being done with provincial and district public sector, administration, health, law enforcement and social sectors for medical care, rights-based services and an enabling environment for PWID [6].

The scale of the hepatitis infections among PWID and the likelihood of high rates of co-infections of HIV/HBV and HCV; there is a need to implement integrated HIV/HBV/HCV client-centered services for PWID. Coordination between the HIV and hepatitis provincial programs as well as harm reduction NGOs is key to plan, design, implement, monitor and evaluate those services.

3.4 Testing

In Pakistan, 86% of people infected with HBV or HCV remain unaware of their infection and its consequences, and they risk transmitting the disease to their families, partners and community. These people do not have timely access to testing; or to care and effective treatment services to delay disease progression and prevent morbidity, mortality or disability. Diagnosing and ensuring the continued engagement of hepatitis patients with health services along the continuum of care is another challenge [6].

In Punjab, the current hepatitis testing policy relies on the patients' motivation to come forward to testing or on risk assessment of certain patients. With this policy, by October 2018, over 650,000 of patients have been registered through EMR of which around 530,000 were new patients with unknown hepatitis status. A total of over half a million were screened for hepatitis B and C, those who screened positive to HCV antibodies were confirmed with PCR. As a result, over 32,000 and 220,000 were found HBV and HCV positive, respectively. Over 117,000 patients were enrolled in treatment. [63]

Hepatitis screening happens at all health facility levels at the Basic Health Units (BHU), Rural Health Centers, Tehseel (sub district) Hospitals and District Headquarters (DHQ), using rapid tests provided by HPCP. For patients who test positive to hepatitis C, a plasma sample is collected and

transferred through a courier service to the hepatitis laboratory managed and run by HPCP for PCR confirmatory testing. Although the PCR results appear on the EMR dashboard as soon as it is processed, the turnaround time of this process may take up to one month, depending on the caseload at the clinic, courier service, processing waiting time and sample quality. There has been limited supply of PCR test kits for nucleic acid testing at the public health care facilities and patients have to get their PCR tests done from the private laboratories. [64]

Diagnosis often occurs late and appropriate tests to guide treatment decisions are seldom available [65]. Reaping the full benefits of treatment and other opportunities therefore requires building a strong, reliable continuum of services, including expanding simple and effective Hepatitis screening programs that can identify individuals who have been infected and then linking them to prevention, treatment and follow up and counselling services. Early diagnosis and treatment of the disease is one of the effective strategies to control the disease and prevent its further transmission to the healthy population.

3.5 Treatment

Before 2015, Interferon injections were given to treat HCV infection in Pakistan. Interferon injections had only 50-60% cure rates with a lot of side effects leading to low patient compliance and less treatment rates [66]. In 2015 Directly Acting Antivirals (DAAs) - nucleotide based drugs have been introduced. These new treatment regimens can achieve Sustained Virologic Response (SVR) in upwards of 90% patients treated under specific conditions (variations subject to genotype) provide a great opportunity for hepatitis C control, both in terms of cure rates as well as in terms of patient convenience since newer regimens for HCV are only 3 months long compared to older 6 month regimens [30]. When used in combination with effective HCV prevention interventions, these treatments make the elimination of HCV a realistic goal.

Approximately 138 Hepatitis Clinics (116 Punjab hepatitis program clinics, 17 tertiary care/teaching hospitals and 5 PKLI independent clinics and 18 common centers with hepatitis program) have been working to provide complete service delivery package in terms of rapid screening, vaccination, diagnosis, and treatment, follow up and counseling services [53]. After a confirmed test result, the medical officer at the hepatitis clinics, based on standard operating procedures (SOPs) and protocols prescribes the treatment to the patient and ensures follow-up. The first month-supply of the medicines is dispensed on-site by the medical officer and the

subsequent supply is dispensed monthly to the recognized address of the patient using a courier company [54]. It has been ensured through EMR that no delay will happen in smooth delivery of medicines to the patients. By October 2018, over 110,000 HCV cases (new + pre-diagnosed) were enrolled for treatment. On an average 10,000 new patients are being given treatment per month and this number will rise with the expansion of more clinics and services [54].

Currently HCV patients are treated with Sofosbuvir, Daclatasvir and Ribavirin in the public and private sectors. As DAAs were procured by the public sector in 2016-17, therefore, majority of the HCV cases have been treated in the private sector. In spite of all this improved healthcare services and infrastructure, the supply and availability of HCV medicines do not match with the huge patient load and disease burden in public sector. Efforts should be taken to make new upcoming DAAs or a combination of DAAs (e.g. Sofosbuvir and Velpatasvir) available and accessible in the public sector [6].

3. 6 Linkages with other public health programs

Hepatitis prevention and control is not the only responsibility of HPCP Punjab. Other public health programs like healthcare waste management program, safe blood transfusion program, HIV and TB Control Programs, PKLI, MNCH, EPI and PITB should also be taken on board for a holistic hepatitis control response. Currently, some cross-cutting activity is taking place between those programs, however there is a need to formalize/strengthen this coordination to ensure appropriate linkages and maximize synergies and efficiencies between these programs [6, 46].

4. KEY CHALLENGES AND OPPORTUNITIES FOR AN EFFECTIVE FUTURE RESPONSE

4.1 Key Challenges

The scale and size of the epidemic is overwhelming requiring high level of commitment, resources, coordination and partnerships as well as innovative approaches to enable rapid scale up to diagnose and treat millions of people. Main challenges have been identified from the situation and response analysis and are:

- Lack of collaboration and coordination with other programs of viral hepatitis prevention, testing and treatment services at provincial level
- Lack of timely and reliable data to identify; the main modes of transmission and risk factors, at risk and affected populations, disease burden in terms of cirrhosis and hepatocellular

carcinoma, and the coverage and quality of essential hepatitis services, and on the treatment outcomes

- Many chronically infected persons are unaware of their infection and its consequences, and are at risk of transmitting the disease to their families and partners.
- Reducing unnecessary injections remains a vital challenge in Pakistan, along with the capacity building of the healthcare staff on injection safety and waste management.
- Unregulated blood transfusions, inadequate policy implementation and inadequate screening of blood donors are the main challenges in a safe blood supply.
- Lack of information about key populations (PWID, Sex Workers, Transgenders and Men who Have Sex with Men)
- Low coverage of needle exchange services for PWIDs and lack of opioid substitution treatment
- Limited access to the testing and new DAAs treatment in the public sector

4.2 Key Opportunities

Opportunities exist for enhancing and expanding the provincial hepatitis response by investing more in the following:

- Strategic information – existence of Field Epidemiology and Lab Training Program (FELTP) and already established sentinel sites for acute viral hepatitis surveillance at Provincial level. Strengthening the sentinel surveillance with improved case definitions following the WHO guidelines will help to generate more appropriate strategic information on viral hepatitis.
- Vaccines – existence of Expanded Program on Immunization (EPI). This needs to be strengthened to improve the vaccination coverage. The significant public health benefits can be achieved by focusing efforts on introducing and rapidly scaling up HBV birth-dose and childhood vaccination.
- Injection, blood and surgical safety – transmission of viral hepatitis B and C in health care settings can be minimized through the implementation and enforcement of Punjab Hepatitis Act 2018.
- Harm reduction for PWID – existence of a strong harm reduction for HIV, which can be extended. Testing and treatment of viral hepatitis B and C among PWIDs - their spouses and partners, in addition to vaccination against HBV for those who test HBsAg negative should be integrated as part of the comprehensive harm reduction package of HIV AIDs Program.

- Treatment – commendable efforts have been made in Pakistan on the availability of oral DAAs along with drastic price reduction. Provincial Hepatitis Control Programs should be strengthened to improve the HBV and HCV treatment coverage. To have greatest impact, effective interventions should be combined and tailored for the specific population, location and setting.

5. PRIORITY ISSUES EMERGING FROM SITUATION AND RESPONSE ANALYSIS

Priorities are set by assessing the situation and response analysis and are established on the basis of the following criteria:

- Having an impact on the transmission of HBV / HCV and changing the trajectory of the epidemic in Punjab, and subsequently in Pakistan
- Ensuring necessary reinforcement measures to achieve the expected results and impacts.

The interventions include:

- ✓ Strengthen the strategic information system that generate the necessary data on viral hepatitis to create awareness and advocate for action and resources, to set provincial targets, to plan for a focused response, to implement programs most efficiently in order to achieve maximum impact, and to monitor and improve quality and outcomes.
- ✓ Ensuring the availability of safe blood and blood products
- ✓ Implementing the Punjab Hepatitis Act 2018 for injection safety and infection control practices in health care and community settings
- ✓ Escalating interventions to prevent mother-to-child transmission of hepatitis B Virus.
- ✓ Link hepatitis and harm reduction services to facilitate integrated prevention, treatment and care for PWID.
- ✓ Strengthening Hepatitis B and C testing
- ✓ Enhancing hepatitis B and C treatment and care

6. PUNJAB HEPATITIS ACTION PLAN (PHAP) AND EXPECTED RESULTS OF THE PROVINCIAL RESPONSE

The Punjab Hepatitis Action Plan (PHAP) outlines the vision, goals, and a set of targets that are aligned with the WHO global goals and targets and with the 2030 Agenda for Sustainable Development. It also outlines the provincial priority interventions and actions to reach the NHSF targets and to contribute to the WHO global elimination targets by 2030.

6.1 Guiding principles

The following guiding principles will direct the implementation of the Punjab Hepatitis Action Plan (PHAP) in order to achieve the greatest impact of the provincial response to Viral Hepatitis (VH).

- *Guiding principle1: Data for Decision Making*

Strong surveillance system will generate adequate data to understand the true public health dimensions and impact of hepatitis epidemic and to plan for focused action and prioritize the allocation of resources.

- *Guiding principle2: Universal health coverage*

Ensuring financial security and health equity are key concerns in the 2030 Agenda for Sustainable Development, and universal health coverage provides a framework for addressing them. Universal health coverage is achieved when all people receive the health services they need, which are of sufficient quality to make a difference, without those people incurring financial hardship. Universal health coverage comprises of three major, interlinked objectives: i) Expanding the range of services provided ii) Covering the populations in need of services and iii) Reducing the direct costs of services.

- *Guiding principle3: The continuum of hepatitis services – an organizing framework*

The continuum of hepatitis services that are needed to curb the epidemic provides the organizing framework for the specific actions to be taken. That continuum spans the entire range of interventions that is needed to achieve the PHAP's targets from reducing vulnerability, preventing and diagnosing infection, linking people to health services by providing treatment and chronic care.

Figure 11: The continuum of viral hepatitis services and the retention cascade

- *Guiding principle 4: Public Health approach*

The public health approach aims to ensure the widest possible access to high-quality services at the population level, based on simplified and standardized interventions and services that can readily be taken to scale and decentralized, including in resource-limited settings. A public health approach aims to achieve health equity and promote gender equality, engage communities, and leverage public and private sectors in the response.

- *Guiding principle 5: Equitable access to services and conservation of the human rights*

The PHAP is supported by internationally agreed frameworks of ethics and human rights, which recognizes the right of all persons to the highest attainable standards of health, including sexual, reproductive and mental health and builds on existing protective religious and cultural values and practices. All people including the populations that may be criminalized and marginalized and who are at higher risk of hepatitis infection, including people who inject drugs, Men Who Have Sex with Men (MSM), prisoners and sex workers receive the health services they need.

- *Guiding principle 6: Partnership and multi-sectoriality*

The PHAP emphasizes broad engagement of all sectors, including the public and private sectors and civil society, in order to expand access to effective prevention and care as widely as possible. The restructuring of the national response to VH will be relevant only if it considers the involvement of all stakeholders and partners according to their mandate and commitment in the National hepatitis response.

- *Guiding principle7: Accountability*

Well-functioning and transparent accountability mechanisms, with strong civil society participation, are vital, given the range of partners and stakeholders needed for an effective viral hepatitis response. Important building blocks include nurturing strong leadership and governance that involves full engagement with all relevant stakeholders, setting clear provincial targets, using appropriate indicators to track progress, and establishing transparent and inclusive assessment and reporting processes at Federal and Provincial levels.

6.2 Vision, goal, targets and strategic objectives

6.2.1 Vision

The Provincial Hepatitis Action Plan adapts the vision of the National Hepatitis Framework 2017-2021, therefore, the PHAP vision states that "In Punjab; viral hepatitis transmission is halted and everyone living with viral hepatitis has access to safe, affordable and effective prevention, care and treatment services".

6.2.2 Goals and targets

The PHAP goals and targets have been aligned with the WHO global and NHSF goals and targets while considering the provincial context, including the nature and dynamics of Punjab viral hepatitis epidemic, populations affected, structure and capacity of the health care and community systems, and resources that can be mobilized.

Goal:

The goal is to eliminate viral hepatitis as a major public health threat by 2030.

Impact Targets:

The impact targets for PHAP will be the same as of National Targets because Punjab caters more than half of the country's population which means it has significant contribution towards the

National Disease Burden of hepatitis and to achieve certain impact in disease reduction the targets should be as same as of National Hepatitis Strategic Framework.

The PHAP Impact targets by 2021 are:

a. Reduce viral hepatitis B and C related deaths by 10%
b. Reduce incidence (new cases) of chronic viral hepatitis B and C infections by 30%

These targets are in line with the Sustainable Development Goals (SDGs) for 2030 and the 2016-2021 GHSS on Viral Hepatitis (VH) and will require a radical change in the hepatitis response and will mean that hepatitis is elevated to a higher priority in public health in Punjab.

6.2.3 Strategic Objectives

The analysis of the epidemiological situation and the provincial response to viral hepatitis revealed five main priority areas that are considered as five strategic objectives given as follows:

- **Strategic objective 1:** To strengthen the availability, sharing and utilization of strategic information that will guide the development and implementation of evidence based-informed policies and strategies
- **Strategic objective 2:** To Strengthen leadership and coordination for the implementation and monitoring and evaluation of an effective, integrated, multisectoral response to hepatitis
- **Strategic objective 3:** To strengthen the quality and scale up coverage and utilization of hepatitis B and C prevention services
- **Strategic objective 4:** To improve the quality and scale up coverage and utilization of the comprehensive Hepatitis B and C testing and diagnostic services
- **Strategic objective 5:** To improve the quality and scale up coverage and utilization of the comprehensive Hepatitis B and C treatment services

6.3 Key interventions and priority actions against each strategic objective

Implementation of the priority interventions, actions and activities are required to achieve key results for each strategic objective. Priority interventions, actions that are suggested by the PHAP to produce the expected results are listed below.

6.3.1 Key interventions and priority actions for attaining Strategic Objective 1: To strengthen the availability, sharing and utilization of strategic information that will guide the development and implementation of evidence based-informed policies and programs

With limited resources for health, the interventions, services and investments are required to be strategically targeted to tackle the local epidemic. Timely and reliable data, with an adequate level

of "granularity", are essential to identify "hotspots", the main modes of transmission and risk factors, the specific populations that are vulnerable, at risk and affected by the epidemic, the health burden in terms of cirrhosis and hepatocellular carcinoma, and the coverage and quality of essential hepatitis services. Such data would make it possible to proactively focus high-impact interventions more precisely and effectively, and to deploy or adapt services to reach greater numbers of people in need.

The key results expected in the context of strategic objective 1 include:

- ✓ **The Provincial Hepatitis Monitoring and Evaluation Health Information System strengthened to measure key disease burden and service coverage indicators**
- ✓ **Accurate, strategic information is available and accessible to all stakeholders, and used for evidence-informed policy and program planning, and resource allocation.**

The following interventions are proposed to produce the key results;

1. Establishing and rolling out a provincial Surveillance and M&E System and Plan
2. Improving availability, accessibility and use of hepatitis strategic information to inform policy and program planning

6.3.1.1 Establishing and rolling out a Provincial Surveillance and M&E System and Plan:

Main actions:

- ❖ Identify data needs, sources, stakeholders' beholders of data relevant to hepatitis (injection safety, blood safety, community-based services, cancer registries, etc.) and ensure cooperation and harmonization of data
- ❖ Conduct rapid assessment of existing HBV and HCV M&E system and practices and develop an M&E plan based on the assessment recommendations.
- ❖ Build technical capacity of strategic information focal points (key Government institutions and NGOs) at provincial and sub-provincial levels in strategic information management
- ❖ Establish a small, adequately staffed and equipped provincial M&E Unit at HCP for overall coordination and implementation of the provincial surveillance and M&E plan
- ❖ Roll-out of provincial M&E plan

- Conduct a participatory Mid-term and final review of the implementation of the provincial action plan
- Monitor data quality periodically and address any obstacles to producing high-quality data (i.e., data that are valid, reliable, comprehensive and timely).

6.3.1.2 Improving availability, accessibility and use of hepatitis strategic information to inform policy and program planning

Main actions:

- Produce timely and high-quality routine program monitoring data.
- Produce timely and high-quality data from surveys and surveillance.
- Develop and maintain provincial and sub-provincial HBV & HCV databases that enable stakeholders to access relevant data for policy formulation and program management and improvement.

6.3.2 Key interventions and priority actions for attaining Strategic Objective 2: To Strengthen leadership and governance for the implementation and monitoring and evaluation of an effective, integrated, multisectoral response to hepatitis

Eliminating viral hepatitis will require commitment from top leadership along with notification of Provincial viral hepatitis coordination body/person that coordinates between and within departments and beyond, evidence-based policies, consensus between stakeholders on Provincial targets, determination to achieve the targets and allocation of funds to undertake Provincial action plan.

Because of the inherent complexity of these issues and the constitutional separation of powers that is also present, some formal organizational structure is a necessary first step to ensure that the principal participants, stakeholders and users are closely involved in the planning and implementation of the Hepatitis plans and policies. Defining a governing and coordination structure, is key to planning and implementing a successful PHAPs.

Expected key results for Strategic Objective 2:

Leadership strengthened, and multisectoral coordination mechanism established to ensure a place at the table for all relevant partners and users and to ensure equality in decision making for an effective, integrated, multisectoral response to viral hepatitis in Punjab

The following interventions are to be implemented to produce the above expected results.

1. Increasing Public and political awareness of the public health impact of viral hepatitis and the social, economic and public health benefits of an evidence-based response, in a view to increase commitment, generate resources and to mobilize action.
2. Establishing a provincial multisectoral coordination mechanism to oversee the provincial hepatitis response

6.3.2.1 Increasing Public and political awareness of the public health importance of viral hepatitis, to generate resources and to mobilize action

Main actions:

- Sensitize high-level decision makers and policy makers on the public health impact of viral hepatitis and the social, economic and public health benefits of an evidence-based hepatitis response in Punjab. Develop a communication strategy to increase public and political awareness of the public health importance of viral hepatitis, to generate the interest required to elevate and accelerate the hepatitis response to reach the provincial targets.
- Celebrate the World Hepatitis day to raise public awareness

6.3.2.2 Establishing a provincial multisectoral coordination mechanism to oversee the provincial hepatitis response

Main actions:

- Establish a provincial multisectoral steering committee to oversee the development and implementation of the hepatitis provincial plans and policies
- Develop and implement a provincial policy for an integrated hepatitis response

- Strengthen and build technical, organizational and institutional capacity of Government and Civil Society institutions for the planning, coordination, implementation and monitoring and evaluation of an effective, decentralized, multisectoral response to hepatitis

6.3.3 Key interventions and priority actions for attaining Strategic Objective 3: To strengthen the quality and scale up coverage and utilization of hepatitis B and C prevention services

The PHAP is prioritizing the key prevention areas that will have the impact on the transmission of HBV and HCV and to change the trajectory of the epidemic.

Expected key results for Strategic Objective 3:

1. **Increased number of new-borns who have benefited from timely birth dose of hepatitis B vaccine (within 24 hours)**
2. **Increased number of infants (<12 months of age) who received the third dose of hepatitis B vaccine**
3. **Increased number of health-care facilities where all therapeutic injections are given with new, disposable, single-use injection equipment**
4. **Increased number of health facilities providing blood transfusion that meets requirements for sufficient and safe blood transfusion**
5. **Increased number of needles–syringes distributed per person who injects drugs**

Increasing the coverage of the universal childhood vaccination and the coverage of birth-dose, will drastically reduce new hepatitis B infections, reducing rates of chronic illness and death. EPI and the MNCH programs have a key role in the implementation of the PHAP and the attainment of the expected results I and 2 will be respectively under the authority of the MNCH and EPI.

Ensuring the availability of safe blood and blood products is a vital public health duty for Punjab. One of the key expected results for objective 3 is to increase the number of the facilities providing blood transfusion that meets requirements for sufficient and safe blood transfusion. Attainment of this expected result will be under the authority of the provincial blood safety program.

A package of harm reduction services for people who inject drugs can be highly effective in preventing the transmission and acquisition of viral hepatitis B and C. Coordination with the HIV control program at Provincial level to mainstream hepatitis interventions and scale up harm reduction services is necessary to build on and strengthen the existing harm reduction services.

Attainment of the expected result number 5 “Increase number of needles–syringes distributed for person who injects drugs” will be under the authority of the HIV program.

The following interventions are proposed to produce the above expected results;

1. Ensuring coordination and collaboration with EPI and MNCH to conduct the priority actions to reach the vaccination key result
2. Implementing consistent infection control practices, including safe injection measures in health care and community settings
3. Ensuring coordination and collaboration with blood safety program to conduct the priority actions to reach the blood safety key result
4. Ensuring coordination and collaboration with HIV program to conduct the priority actions to reach the harm reduction key result

6.3.3.1 Ensuring coordination and collaboration with EPI and MNCH to conduct the following priority actions

Priority actions:

- Advocate towards decision makers to prioritize and allocate resources for hepatitis B birth-dose vaccination.
- Raise awareness among the general public on the importance of hepatitis B birth-dose vaccination,
- Develop and implement the reporting, monitoring and evaluation activities

6.3.3.2 Implementing consistent infection control practices, including safe injection measures in health care and community settings

Main actions:

- ❖ Implement WHO injection safety Guidelines, with the aim of reducing unnecessary injections and transitioning, where appropriate, to the exclusive use of safety-engineered Injection devices.
- ❖ Establish a provincial infection prevention and control regulating authority with the ability to:
  - ✓ Investigate infection outbreaks in health care settings
  - ✓ Oversee the implementation of safe therapeutic injection practices

- ✓ Ensure compliance with correct sterilization procedures and medical west management in both private and public sectors and the informal health sector
- ✓ Promote the exclusive use of the Safety Engineered Devices and reuse prevention devices
- ✓ Ensure adequate funding for single use disposal injection equipment in all public health facilities and adherence to measures to prevent the re-use of such equipment
- ✓ Promote assessment of IPC/injection safety practices to support with a learning culture

❖ Ensure adoption of standard precautions in all health facilities, including training of and monitoring of health care workers adherence to standards precautions

6.3.3.3 Ensuring coordination and collaboration with blood safety program to conduct the following priority actions

Blood safety should be declared a **"public health emergency"** in the province and policy makers should be taken on board to take cognitive actions to inculcate the strict and stringent culture of following the high standards to streamline blood bank practices consistently ascertaining the safe blood and blood products' transfusion (a life-saving, not a life-threatening event). The true implementation of Punjab Blood Transfusion Safety Act 2016 (XLVI of 2016) is mandatory to ensure all this.

Main actions:

- ❖ Advocate towards decision makers to establish and implement provincial policies and practices on blood safety based on WHO guidance
- ❖ Conduct annual awareness-raising campaigns among the general public to promote voluntary non-remunerated blood donations
- ❖ Develop and implement the reporting, monitoring and evaluation activities

6.3.3.4 Ensuring coordination and collaboration with HIV program to conduct the following priority actions

Main actions:

- ❖ Strengthen and expand existing harm reduction services through capacity building on viral hepatitis, provision of hepatitis test kits

- ❖ Establish partnership with NGOs delivering harm reduction services to enable the appropriate linkages to diagnose and treat PWID who are infected with viral hepatitis
- ❖ Advocate for and work on the introduction of opiate substitution therapy for PWID as an additional essential harm reduction intervention that can prevent transmission of viral hepatitis
- ❖ Develop and implement the reporting, monitoring and evaluation activities

6.3.4 Key interventions and priority actions for attaining Strategic Objective 4: To improve the quality and scale up coverage and utilization of the comprehensive Hepatitis B and C testing and diagnostic services

Testing and diagnosis of chronic HBV and HCV infection is the gateway for prevention as well as care and treatment services. Early identification of persons with chronic HBV or HCV infection enables them to receive the necessary care and treatment to prevent or delay progression of liver disease.

Punjab will need to intensify the HBV and HCV testing to reach the testing targets of the PHAP. The key results expected in the context of strategic objective 4 include:

- ✓ **Increased number of people living with chronic HBV infection with continued and easy access to HBV testing services, in accordance with national & provincial standards and guidelines**
- ✓ **Increased number of people living with chronic HCV infection with continued and easy access to HBV testing services, in accordance with national & provincial standards and guidelines**

There are many facility- and community-based opportunities and approaches to deliver viral hepatitis testing. There is a need to consider a strategic mix of these testing approaches to reach different populations, identify people who are unaware that they are infected in the early stages of infection, and support the timely linkage to prevention, care and treatment services for those who test positive or negative.

The following interventions are proposed to produce the above key result;

1. Assessing the comprehensiveness and quality of the existing Testing & Diagnostic Services and develop scale up plan and testing policy for improvement.
2. Implementing the scale up plan and the testing policy and monitoring progress in their implementation

6.3.4.1 Assessing the comprehensiveness and quality of the existing Testing & Diagnostic Services and develop testing scale up plan and testing policy for improvement.

Main actions:

- ❖ Conduct the hepatitis B & C testing and treatment cascade analysis
- ❖ Develop a testing scale up plan based on the assessment findings and recommendations
- ❖ Develop a hepatitis testing policy based on the provincial epidemiology and testing efficiency

6.3.4.2 Implement the scale up plan and the testing policy and monitor progress in their implementation

- ❖ Revise and update the national standards, protocols and guidelines for HBV and HCV testing
- ❖ Conduct training of health-care and community institutions staff in testing services and linkage to treatment for HBV and HCV patients
- ❖ Develop the M&E of testing component of the program to monitor progress in the implementation of the testing scale up. This will be part of the broader M&E of the national Hepatitis response

6.3.5 Key interventions and priority actions for attaining Strategic objective 5: To improve the quality and scale up coverage and utilization of the comprehensive Hepatitis B and C treatment services

The primary reason **f**or diagnosing people with chronic hepatitis B and C is that they can benefit from treatment; therefore, it is important to directly link testing and treatment. Plans for major scale up of treatment services will not succeed without scaling up testing. Similarly, major scale up of testing will create a demand for treatment.

The key results expected in the context of strategic objective 5 are:

- ✓ **Increased number of people living with chronic HBV infection with continued and easy access to HBV treatment services, in accordance with national and provincial standards and guidelines**

- ✓ **Increased number of people living with chronic HCV infection with continued and easy access to HBV treatment services, in accordance with national and provincial standards and guidelines**

The following interventions are proposed to produce the above key result;

1. Assessing the comprehensiveness and quality of the existing Treatment Services and develop scale up plan and testing policy for improvement. This intervention is linked to the intervention 6.3.4.1: Conducting the hepatitis B & C testing and treatment cascade analysis
2. Implementing the treatment scale up plan and monitoring progress in its implementation

6.3.5.1 Assessing the comprehensiveness and quality of the existing Treatment Services and developing treatment scale up plan for improvement.

Main actions:

- ❖ Conduct the hepatitis B & C testing and treatment cascade analysis. This action is linked to the action number one of the interventions 6.3.4.1
- ❖ Develop a treatment scale up plan based on the assessment findings and recommendations

6.3.5.2 Implementing the treatment scale up plan and monitoring progress in its implementation

Main actions:

- ❖ Revise and update the national standards, protocols and guidelines for HBV and HCV treatment
- ❖ Conduct training of dedicated staff in all Governorates in the revised protocols and guidelines
- ❖ Develop the M&E of treatment component of the program to monitor progress in the implementation of the treatment scale up. This will part of the broader M&E of the national Hepatitis response

7. IMPLEMENTATION OF THE PUNJAB HEPATITIS ACTION PLAN

Effective implementation of Punjab Hepatitis Action Plan (PHAP) depends on concerted Provincial actions from all stakeholders in the health and other sectors to respond to viral hepatitis. Success requires strong partnerships to ensure policy and program coherence. Within the health sector, linkages across different disease-specific and cross-cutting programs need to be established and strengthened. Implementation of the Provincial action plan needs a strong monitoring and evaluation system to generate the best possible data on the viral hepatitis situation, trends and responses, and to monitor the hepatitis response through a set of standard and measurable indicators.

7.1 Development of the Operational Plan

An Operational Plan (annex 1) specifying activities per actions and per interventions as well the responsible of the activity implementation and the timeline is developed to guarantee the implementation of the action plan.

7.2 Collaboration with other public health programs and partners

Responses to hepatitis can learn from successful public health programs in other areas, including those for HIV, tuberculosis and immunization. Innovative HIV service delivery approaches can be adapted to reach specific populations. Quality improvement and price-reduction strategies that have enabled rapid expansion of HIV treatment coverage provide lessons for increasing access to affordable hepatitis C virus treatment. Immunization programs can demonstrate how a range of strategies can be used to reach all communities and ensure access to effective, safe and affordable vaccines. Where possible, integration of hepatitis prevention, diagnosis and treatment services can maximize the efficiency of service delivery as well as enable reach to under-served populations. Communities, and leverage public and private sectors should be engaged in the response to focus interventions for maximum impact.

7.3 Ensuring long-term viability of hepatitis programming through integration

Viral hepatitis prevention and control should be integrated within the Provincial Ministries and Departments of Health, structures and programs to ensure the long-term viability of hepatitis interventions. Integration of policies and service delivery is required at different levels of the health system, with the relative contributions and roles of primary health care, referral care and hospital care well defined.

7.4 Coordination mechanisms

This hepatitis response will be implemented through a multisectoral approach. Civil society, private sector and all stakeholders will be involved in the implementation of response.

The responsibilities of the various stakeholders for the PHAP implementation will be clearly defined and can be reviewed and reorganized during the whole process of the implementation.

- Provincial multisectoral steering committee

Establishing a formal provincial multisectoral steering committee is a necessary first step to ensure that the principal participants, stakeholders and users are closely involved in the planning and implementation of the Hepatitis plans and policies. Defining a multisectoral coordination mechanism, is key to planning and implementing a successful HPAPs.

- NGOs

Leadership in the health sector needs to foster partnerships with the civil society to advocate supportive policies. NGOs will be involved in the implementation of community activities, particularly interventions for the most affected populations. Organizational and operational mechanisms will be developed for the contribution of NGOs in the national hepatitis response.

- Private sector

Private sector is playing an important role in Pakistan specifically in the viral hepatitis treatment. Mechanisms for enhancing the coordination and collaboration with the private sector will be put in place, including those inherent in advocacy and data collection on the hepatitis patients managed by the private sector.

8. MONITORING AND EVALUATING THE HEPATITIS RESPONSE

Progress in implementing the hepatitis response to viral hepatitis should be assessed at Provincial and District levels with indicators on availability, coverage outcome and impact. The PHAP adopted the WHO global framework for monitoring and evaluation of the response to viral hepatitis. The global framework emphasizes 10 core indicators to monitor progress towards the achievement of the targets set out in the plans. In addition, 27 indicators are proposed. Of these, 10 indicators are specific to viral hepatitis and 17 have been used in the past by other programs, including HIV/sexually transmitted infection (STI), immunization, blood safety, injection safety and infection control, harm reduction and non-communicable diseases, cancer.

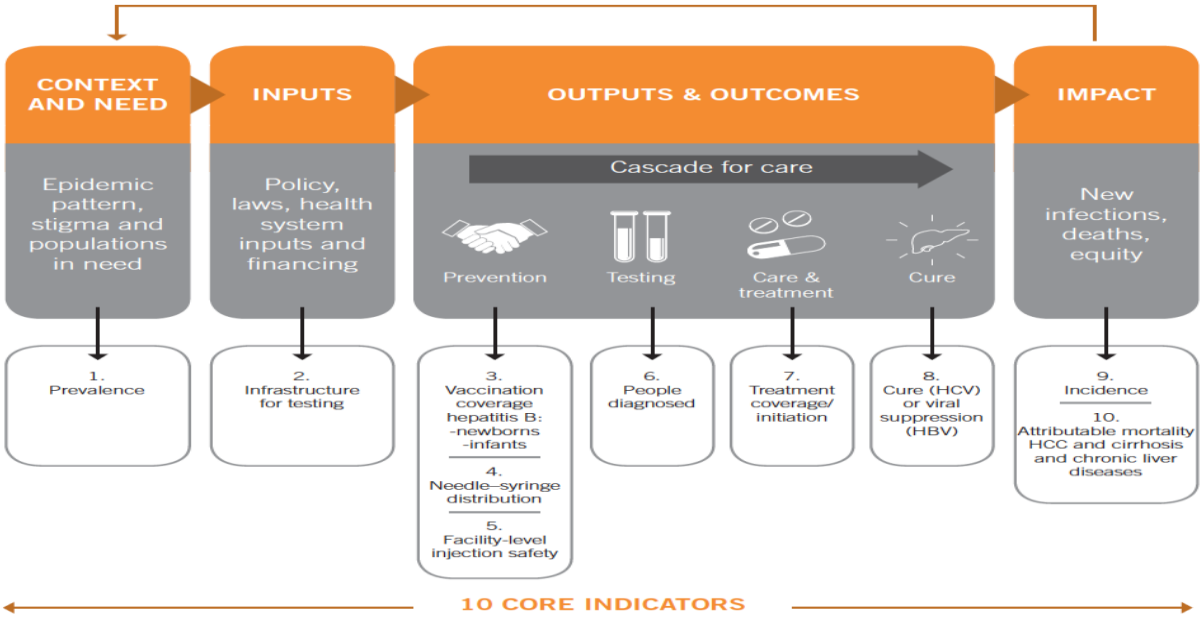


Figure 12: Global monitoring and evaluation framework for the health sector response to viral hepatitis B and C

Based on the global M&E framework for hepatitis B and C, key indicators that are relevant for the program area and are appropriate for a national results framework have been specified in the draft operational plan. A national results framework is developed (annex 2). Using the selected indicators, the framework describes the overall concrete outcomes expected to result if the program is effective, as well as the outputs expected if the program is implemented according to PHAP. The results framework defines "success" in the short term, and the long term.

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