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'Hepatitis B & C'Seroprevalence Among The Healthy Blood Donorsin, Sahiwal Pakistan

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ABSTRACT

This study aimed at determining the seroprevalance of Hep B and C among the healthy blood donors in the region of Sahiwal. By obtaining the data we estimated the age, blood group and percentage of the cases of HBV and HCV from all the donations among the people of District Sahiwal. The design of our study was descriptive cross sectional study.: Blood donations of about 6 years period were studied to determine the prevalence of HBV and HCV seropositivity. Blood samples were collected from the donors along with their information of age, sex and blood group.. During the study period, a total of 39114 blood donors were screened for the presence of Anti-HCV and Hepatitis B surface antigen (HBsAg) using Immunochromatographic kit as per directions of the manufacturer company. HBV and HCV positivity, sex prevalence age prevalence and blood group prevalence were the research variables. The obtained data was analyzed and results for variables were noted as number and percentage. A total of 39114 donations were collected with an average of 6512 donations per year. Among these donors 99.99% were male. The age group of these donors was 16-60 years, with mean age of 23 years. Out of 39114 donors 467 were HBsAg and 1775 were anti HCV antibody positive. 30 donors were positive for both HBsAg and anti HCV antibodies. Incidence of HBC and HCV was among all the blood groups but positive blood groups shoed maximum prevalence. Because of high occurrence of the two main blood transmitted infections of Hepatitis B virus and hepatitis C virus in our population, it is necessary to screen all blood donors for both HBV and HCV infections and strict measures should be takenin selection of blood donors.

***Key Words*:**Blood donors, HBsAg , anti HCV, Hep B Hep C, ICT, incidence , seroprevalance,

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INTRODUCTION

Hepatitis in one of the major problems of health worldwide especially in developing countries like Pakistan.It may be hepatitis A, B, C, D, E and G. It is one of the major causes of diseaseand deathgenerally. The major modes of transmission of this disease in Pakistan are use ofadulteratedneedles, razors in barber shops, tattoo created with unsterilized needle, unsterilizedequipment in medical practice and sharing things of personal use with infected persons. It is also commonly transmitted by unsafe blood transfusion. It is a fact that most of the individuals, infected with HBV and HCV, remain asymptomatic, so community is a potential source of spread of these infections to others. (1).The main cause may be the lack of proper health facilities centers, poor socio-economic status of society and no or less public awareness about the transmission. It can be transmitted vertically from an infected mother to her infant as well as during breast feeding.In Pakistan annually round about 1.5 million units of blood or blood products are transfused as reported by WHO. Of this 15% are from professional donations, 75% are from replacement donations and 10% are from voluntary unpaid donations (2). Epidemiological individualities and risk factors for transmission of infection are different from region to region across the country (3).It is reported that the incidence of Hepatitis B and C viruses varies according to locality in different parts of country. According to various studies directed at various times the prevalence of HBV and HCV infections is 1.1%–6.2% and 2.06%–7.69% respectively in Pakistan (4, 5).A gradual decrease in prevalence of HBV is noted, which may be the result of introduction of immunization program against HBV infections from birth and at different stages of life (6).Conversely, an increase in prevalence of HCV is noted that is because ineffective and improper vaccine against it.In2003, The Government of Pakistan made a National Blood Policy to ensurea proper screening of blood before labeling it safe for transfusion (7).In Pakistani population, the risk of spread of hepatitis through blood transfusion has been noted to be high which is certainly because of deficiency of proper screening of blood before transfusion and awareness in past. The other reason of so much high spread rate of HBV may be the late introduction of vaccination (8).Hepatitis B virus is 50-100 stints more transmittable than HIV and 10 times more Infectious than Hepatitis C. Complications of

hepatitis include chronic liver disease, cirrhosis, and hepatocellular carcinoma (HCC).The objective of this study was to assessmentthe frequency of HCV and HBV infections amid the healthy blood donors at Sahiwal, Pakistan. The outcomes of the present study should help in preventing infections of these diseases in the community and make blood transfusion of safe. (This research study includes the seroprevalance of Hepatitis B and Hepatitis C among the people of District Sahiwal)

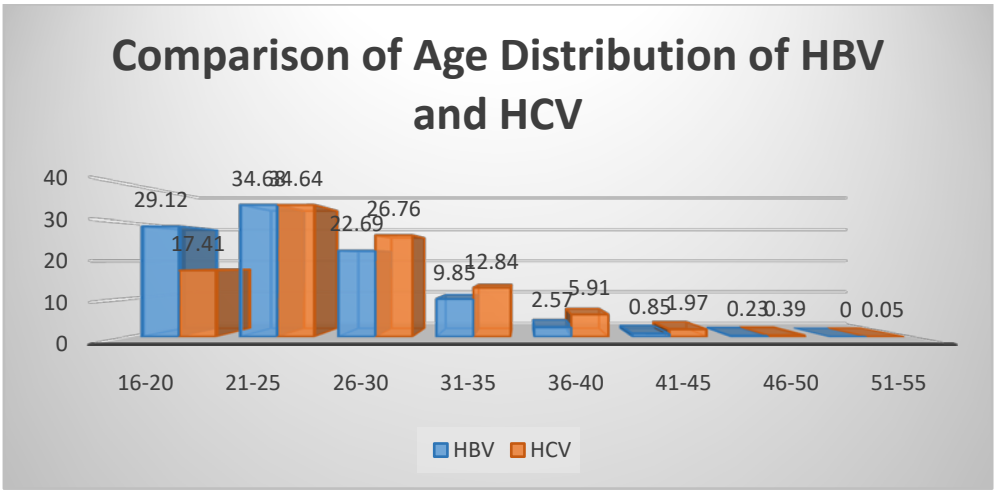
METHODOLOGY

A descriptive cross sectional study was conducted in DHQ Hospital Sahiwal from Oct 2012 to March 2017. The data of blood donors was collected for about six year's period. The current study was established on official records of Hospital. During the noted period, a total of 39114 blood donors came to the Blood Bank, and they all were screened for anti-HCV and HBsAg. Otherwise physically healthy donors, who had a history of pre-donation screening test for HBV and HCV and were within the age range of 16-60 years, were included in the study and certified to donate blood. Those donors who had history of pervious exposure to HBV, HCV and HIV infections, jaundice in the past 6 months, or those, who had donated blood in the past 3 months were excluded. The method used was the collection of 3 ml of blood from the donors in Laboratory of DHQ Teaching Hospital Sahiwal. Blood samples were testedat Laboratory of DHQ Teaching Hospital Sahiwal using rapid ImmunoChromatographic test (ICT) kit.For recognition of Anti-HCV antibodies, aone-step Rapid Test is used as per directions of manufacturer. This test is based on the principle of the double antigen-sandwich technique.In this technique the membrane of the kit device is pre coated with recombinant HCV antigen to which the test specimen reacts and produces a colored line. This stained line suggests a positive test, and if there is no colored line, it means the result is negative.ForHBsAg detection, Hepatitis Surface Antigen Rapid Test was used as per directions by manufacturer. The principle of the test is double antibody-sandwich technique. The membrane in test device is already with anti-HBsAg antibodies to which the test specimen reacts and givesa colored line in test region of device which is expressive of a positive result and absence of this lineis revealing of negative result.HBV and HCV positivity, sex, age prevalence and blood group prevalence were the different research variables. A collected data was analyzed and number and proportion of above mentioned variables were noted.***Immuno_Chromatographic Test(ICT):***
In this method 3ml of venous blood was taken from each donor/patient and serum is separated. HBsAg and antiHCV are tested by ICT method and results were recorded. The principal of this test is that the Test specimen (serum) reacts with this antigens that are already coated on the membrane of the test device, and yields a colored line which indicates positive test, whilst absence of the line indicates negative result.

FINDINGS AND RESULTS

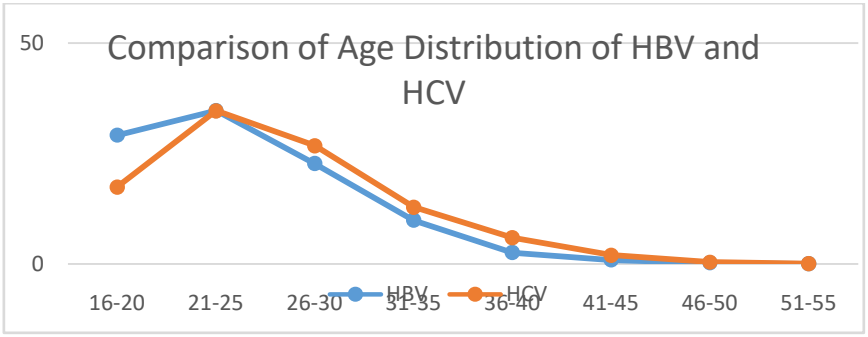
A descriptive cross sectional study was conducted at DHQ Teaching Hospital Sahiwal from Oct 2012 to March 2017. A total of 39114 blood donationwere collected with an average of 6512 donations per year. Of these donors 99.9% were male. These are mixed donors (volunteers, replacement or direct donors). The age range of these donors was 16-60 years

with mean age of 23 years.The frequency of range groups of class interval 5 is graphically shown below:



This graph shows that a range group of 20-25 shows maximum frequency with mean age of 23 years.

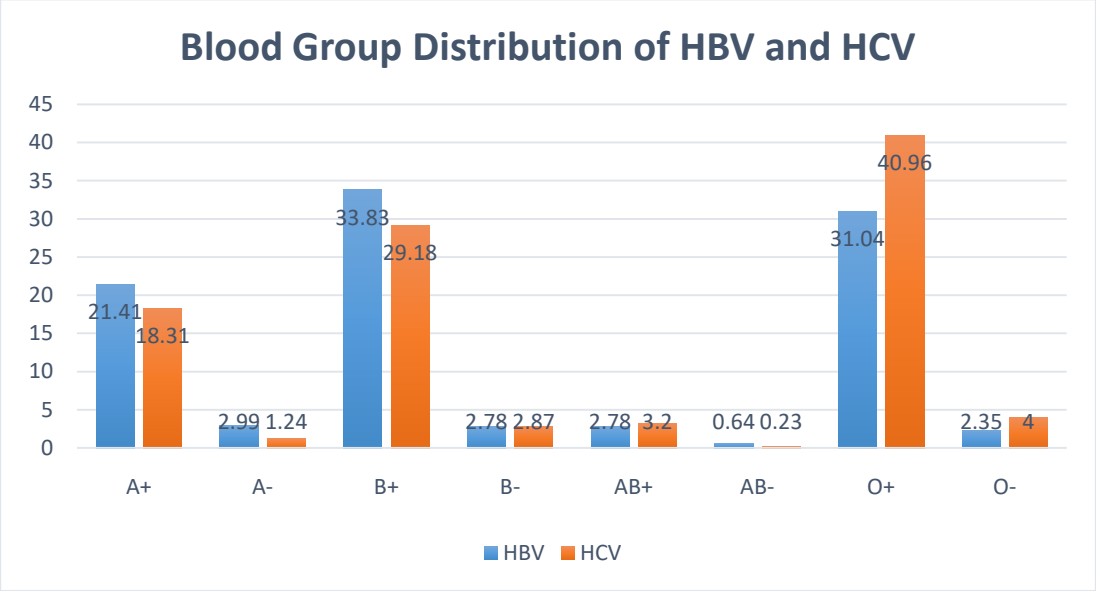
The comparison of age of donors for HBV and HCV is shown below:



This comparison shows that HBsAg positive donors are decade younger than Anti-HCV positive.

Blood grouping was done for all the HBsAg positive donors and Anti-HCV antibody positive donors. The prevalence of HBV and HCV were almost among all the blood groups but the blood group B+ve showed maximum prevalence for HBV and blood group AB-ve showed minimum prevalence for HBV. For HCV blood group O+ve showed maximum prevalence and blood group AB-ve showed minimum prevalence.

The graphical representation of HBV and HCV incidence for all blood groups:



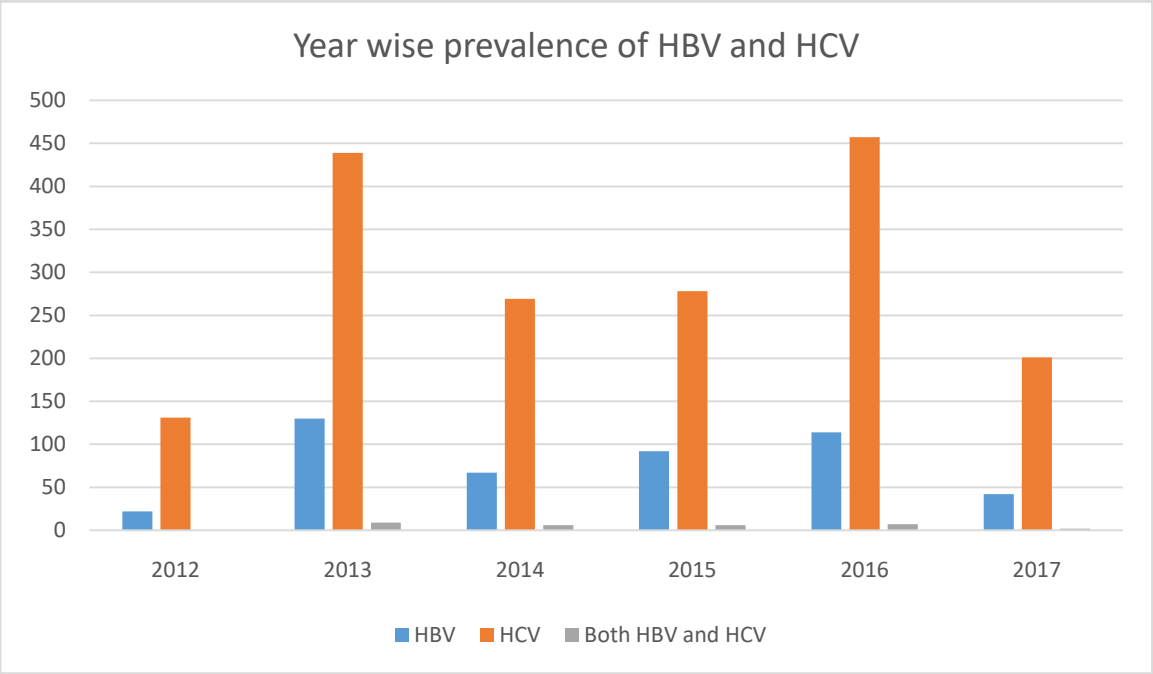
Out of 39114 donors 467 were HBsAg positive and 1775 were Anti-HCV antibody positive. 30 donors were confirmed positive for both HBsAg and anti-HCV antibody positive. The prevalence data for HBsAg and Anti-HCV antibody for each year was compared with each successiveyears. There was irregular increasing and decreasing trend of prevalence.

Year	No. of Donations	HBsAg positive No.	%	Anti-HCV positive No.	%	HBV+HCV positive No.	%
2012	2236	22	0.990	131	5.858	0	0.000
2013	9936	130	1.310	439	4.418	9	0.090
2014	6085	67	1.101	269	4.420	6	0.098
2015	6937	92	1.326	278	4.007	6	0.087
2016	11190	114	1.018	457	4.084	7	0.063
2017	2730	42	1.540	201	7.362	2	0.073

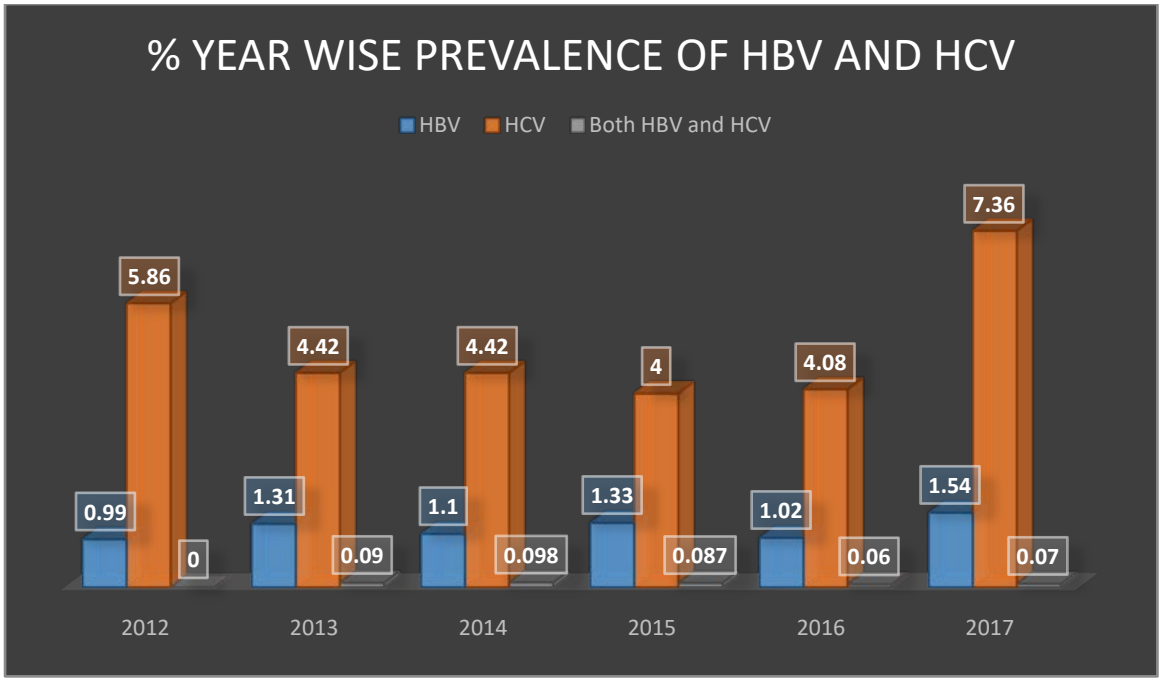
Comparison of Prevalence of Hepatitis in Consecutive Years

Years	HBsAg	HCV
2012 Vs 2013	0.99% Vs 1.31%	5.85% Vs 4.42%
2013 Vs 2014	1.31% Vs 1.10%	4.42% Vs 4.42%
2014 Vs 2015	1.10% Vs 1.32%	4.42% Vs 4.00%
2015 Vs 2016	1.32% Vs 1.02%	4.00% Vs 4.08%
2016 Vs 2017	1.02% Vs 1.54%	4.08% Vs 7.36%

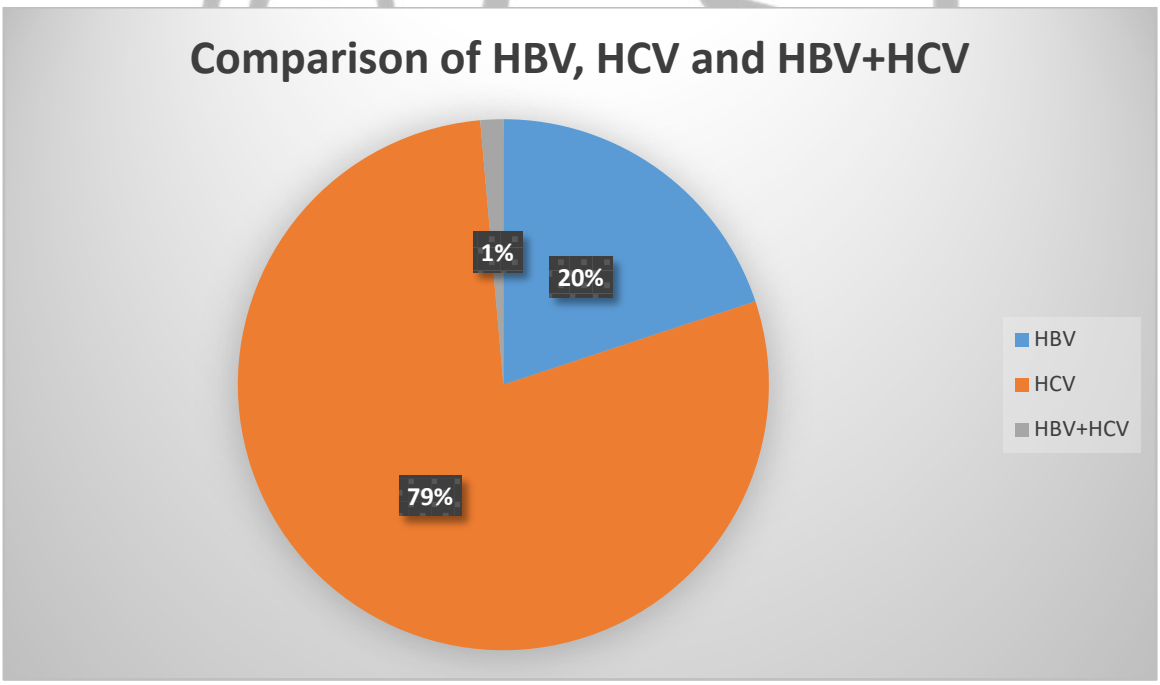
The prevalence data for HBsAg and Anti-HCV antibody for each year was compared with each consecutive years. There was irregular inclining and declining trend of prevalence.



Year wise prevalence of HBV and HCV



Out of 39114 screened donors 2242 were the cases of HBV & HCV. From the cases 79% were antiHCV antibody positive, 20% were HBsAg positive and 1% were positive for both antiHCV antibody and HBsAg.



DISCUSSION

HBV and HCV infections have significant morbidity and mortality worldwide (9). The worldwide prevalence of HCV is 3% and the carrier rate of HBsAg ranges from 0.1% to

0.2% in Britain and the USA, 3% in Greece and southern Italy and up to 15% in Africa and the Asia. In Pakistan, a prevalence of 10% has been estimated (10, 11). Different reports have estimated the incidence of HBsAg in volunteer blood donors from 0.82% to 5% (12). An expected one-third of the world's population has serologic evidence of previous infection, and the virus causes more than 1 million deaths every year (9).Both these diseases are present in the population of Pakistan, yet there are varying reports of their prevalence (9, 13, 14). HCV is one of the silent murderer diseases which are increasingunnoticed in Pakistan. It looks to be more hazardous than HBV because there are often no clinical symptoms and, when HCV is diagnosed, huge damage has already been done to the patient. According to an assessment there are about 9 million HBV carriers in Pakistan and over 14 million HCV carriers (7, 15, 21). These figures may not be accurate, however, because in most studies, mostly in Pakistan, the population sample selected is limited to a specific area or part or high-risk group. In different studies the incidence has been estimated as 3%–10% for hepatitis B surface antigens (HBsAg) and 2.2%–14% for HCV antibodies (4, 5, 9, 13, 14).In the current study an effort has been made to estimate the seroprevalance of hepatitis B and C amongst healthy donor'spopulation from Sahiwal region, Punjab, Pakistan. Age distribution is shown in figure 1 and 2. The earlier peak of Hep.B could be due to vertical transmission of HBV in our population. In this study donors less than 16 years of age were not considered so it was not possible to assess the minimum age of acquisition of HBsAg. Cross sectional sero survey of population under 16 year may show the age of highest prevalence of HBV in our population. Since our male population starts their occupation and become socially and sexually active in the earlier half of their third decade of life. The late positivity of HCV may be due to this late exposure to the risk factors for HCV. Detailed epidemiological studies are required to correlate these observations with prevalence of Hep.C.Overallprevalence of Hep.B during these 6 years was 1.21% which is comparable to the previous studies conducted in different districts of Pakistan (6). The study shows irregular downward and upward trends during this period. There is no obvious explanation for this irregular trend. The average seroprevalance of Hep.C was 5.03% which was 3.82% higher than Hep.B prevalence. These results were also comparable to the previous studies conducted in different districts of Pakistan. The higher prevalence of Hep.C maybe due to non-availability of vaccine, non-availability of wider screening methods and absence of screening of donors for HCV in many centers. It may be due to continuation on practice while giving injections and an unknown mode of transmission other than parenteral route. The maximum seroprevalance of both Hep.B & C among the positive blood group donors may be owing to the reason that positive groups are more common.

CONCLUSION

The results of the current study revealed that Hepatitis C prevalence is high corresponding to Hepatitis B. In addition, among males high incidence was recorded than females. It is recommended that best care should be applied during surgical events or treatments and blood transfusions. The further wakefulness movement against Hepatitis B and C infections should be approved to instruct the common people on the risk factors and rout of spreading ion in order to decrease the rate of infection.Though measures have been taken to control viral

hepatitis in Pakistan, there is lot more to do. There is an intense need to establish centers for registrations of outbreaks, mortality related to hepatitis and liver diseases, HCC. The serosurway system for viral hepatitis needs expansion at large scale and to remote areas. A universal vaccination of newborns and high-risk groups for HBV should be implemented. A better compliance should be make sure todecrease the load of HBV in future. Again awareness among health care providers, theavoidance of unnecessary therapeutic injections, safe blood transfusion services, use of auto-disposable syringes, and better utilization of available resources are key steps in the prevention and management of hepatitis B and C.

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