REPUBLIC OF TURKEY
MINISTRY OF HEALTH

TURKISH VIRAL HEPATITIS PREVENTION and CONTROL PROGRAM

2018-2023

ANKARA-2019

REPUBLIC OF TURKEY
MINISTRY OF HEALTH

REPUBLIC OF TURKEY
MINISTRY OF HEALTH
GENERAL DIRECTORATE OF
PUBLIC HEALTH

TURKISH
VIRAL HEPATITIS
PREVENTION and CONTROL PROGRAM

2018-2023

ANKARA-2019

ISBN : 978-975-590-730-7
Ministry of Health Ed. No. : 1140

Publication : TGV Co., Ltd.
Phone : +90 312 362 07 87
Fax : +90 312 362 59 48

Printing : Fersa Matbaacılık Co., Ltd.
Phone : 0312 386 17 00

Interpreters : Deniz Cansen KAHRAMAN, Elif SERTESEN

www.hsgm.saglik.gov.tr

This publication has been prepared and published by Ministry of Health of Turkey, General Directorate of Public Health, Department of Communicable Diseases and Department of Vaccine Preventable Diseases.

Free of charge

PREAMBLE

Viral hepatitis is an major public health problem that is encountered worldwide and has a negative impact on national economies. While the hepatitis C virus (HCV), along with chronic alcohol consumption, is the most frequent cause of chronic liver disease in Western society, the hepatitis B virus (HBV) and HCV infections are the most frequent causes of chronic liver disease in Turkey. Viral hepatitis may lead to acute and chronic hepatitis, cirrhosis, liver failure, and liver cancer (hepatocellular cancer, HCC), all of which can lead to morbidity and death. Approximately 25–40% of chronic HBV carriers may develop chronic hepatitis, cirrhosis, or HCC. Additionally, viral hepatitis leads to a decline in the productivity of patients and their relatives, along with the deterioration of their quality of life.

One in three people worldwide has a history of HBV and over 250 million people are currently infected with HBV. It is estimated that 71 million people are infected with HCV and that 1.75 million new cases have developed globally since 2015. It is also estimated that more than 1 million people die from cirrhosis associated with viral hepatitis and HCC each year around the world.

HBV and HCV infections are significant health problems in Turkey. One in three people over 18 years old has a history of HBV. It has been reported that HBV infection is the cause of 30–40% of cirrhotic cases and 40–50% of HCC, while HCV infection is responsible for 20–25% of cirrhotic cases and 25–30% of HCC. Between 2012 and 2016, more than half of liver transplantation recipients had experienced viral hepatitis-related liver disease prior to liver transplantation.

Our ministry has taken massive steps toward the development of hepatitis vaccines for the treatment of viral hepatitis B over the last 25 years. With the wide application of the HBV vaccine, a considerable decline in the emergence of new HBV infection cases has been noted, with an associated decrease in HBV infection-linked acute and chronic liver diseases, cirrhosis or HCC development. Despite these major achievements, several measures remain to be implemented with a view to preventing and controlling viral hepatitis. Therefore, "The Turkish Viral Hepatitis Prevention and Control Program" has been conceived and designed as a multidisciplinary approach with the aim of further improving Turkey's health policies targeting viral hepatitis. Within the scope of this program, several studies have been developed to raise awareness throughout Turkish society, particularly among those groups who are most at risk. Early diagnoses and appropriate guidance for patients with regard to treatment plans, in addition to the prevention of cirrhosis and liver cancer, with the intention of preventing disease transmission, are among the program's priorities.

For viral hepatitis to be recognized as a priority among the health problems that affect society, global efforts must be shaped into effective protection and control strategies in response to specific conditions at national and regional levels. This action plan, constituted with the aim of fighting the spread of viral hepatitis, is a national plan: each and every individual is responsible for actualization of this plan, along with academics and public and private organizations, particularly the Ministry of Health of Turkey. I would like to express my sincere gratitude to all partners who continue to support and contribute to this program.

Fahrettin KOCA
Minister of Health

TABLE OF CONTENTS

1. INTRODUCTION

Viral hepatitis is the most common liver disease worldwide, and is usually caused by the hepatitis viruses (A, B, C, D, and E). Viral hepatitis can exhibit different clinical courses—acute and chronic hepatitis—and can progress to cirrhosis, liver failure, and liver cancer (hepatocellular carcinoma (HCC)), which, in turn, can lead to morbidity and mortality.

The World Health Organization (WHO), in its Global Action Plan for Viral Hepatitis Prevention and Control, aims to move toward a world where the transmission of viral hepatitis transmission have been eliminated and those in need can access safe and effective treatment. To this end, the aims of its Global Action Plan include the prevention of hepatic virus transmission, the reduction of complications and deaths due to viral hepatitis, improvement of patient care, and the mitigation of the negative socio-economic impact of viral hepatitis.

The WHO created the 2016–2021 Global Health Sector Strategy on viral hepatitis in May 2016. The Global Health Sector Strategy includes the elimination of viral hepatitis as a public health threat by 2030, and predicts a 90% reduction in the risk of new infections, an 80% reduction in the number of hepatitis patients that can be treated, and a reduction in hepatitis-related mortality to 65%. (1).

1.1. IMPORTANT FACTORS IN VIRAL HEPATITIS PREVENTION AND CONTROL

1.1.1 Awareness and Prevention

The first step in the prevention and protection of viral hepatitis is disease awareness (Figure 1). At the time of diagnosis, most patients have insufficient knowledge about the disease. To raise awareness, these patients should be informed about the hepatitis viruses, transmission routes, high-risk populations, the complications of the disease, and appropriate treatment. A good starting point would be to raise awareness not only among patients and carriers, but also among healthy individuals, regarding the prevention and transmission of the disease.

1.1.2 High-Risk Populations

High-risk populations generally fall within the same categories in each country, but the prevalence of the disease may vary from country to country, and even between different geographic regions of the same country.

Health-care professionals, frequent users of blood and blood products, patients who received blood transfusions prior to 1996, intravenous drug users, homeless people, immigrants, prisoners, those with a history of risky sexual practices (i.e., sex workers, men who have sex with men [MSM]), people who live in areas with poor hygiene compliance, those who lack access to clean water resources, and those living in low socio-economic conditions are among the high-risk populations.

1.1.3 Surveillance and Screening

The main constituents of a successful fight against viral hepatitis are prevention methods and appropriate screening and surveillance practices that allow timely and accurate diagnosis. Acute viral hepatitis is currently under surveillance in Turkey. It will be useful to determine the epidemiological profiles of the actual number of patients and to strengthen the hepatitis surveillance system for the purpose of monitoring those who have been diagnosed. Screening, monitoring, identification of new infections, and the provision of health-care and treatment options for high-risk groups will prevent subsequent complications, fatalities, or transmission to other people.

1.1.4 Access to Treatment and Appropriate Guidance to Patient

Research and development activities relating to viral hepatitis are increasing daily, and new and more efficient treatment options are now available to patients. The burden of HCC and cirrhosis on health economics caused by viral hepatitis can be significantly reduced with effective treatment. Therefore, primary physicians should update their knowledge and guide high-risk populations. Individuals who are diagnosed following examination should be referred to appropriate specialist physicians and the available treatment options should be explained.

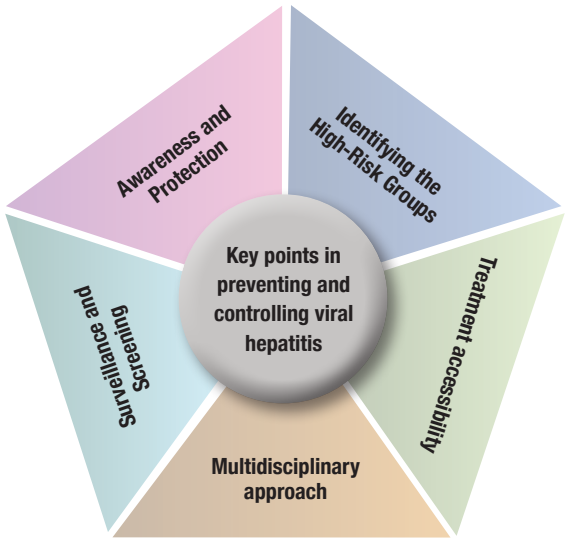


Figure 1 Key Points of Controlling Viral Hepatitis

1.1.5 Multidisciplinary Approach

Implementation, execution and follow-up of the Viral Hepatitis Prevention and Control Program can be achieved through collaborative studies involving all participants.

2. VIRAL HEPATITIS AND THE CURRENT SITUATION IN TURKEY

2.1. HEPATITIS A VIRUS INFECTION

2.1.1 General Information

The hepatitis A virus (HAV), which causes hepatitis A infection, is a non-enveloped Ribonucleic acid (RNA) virus. Transmission takes place predominantly via the fecal-oral route, person-to-person contact, or consumption of contaminated food, water or drinks. Increased compliance with

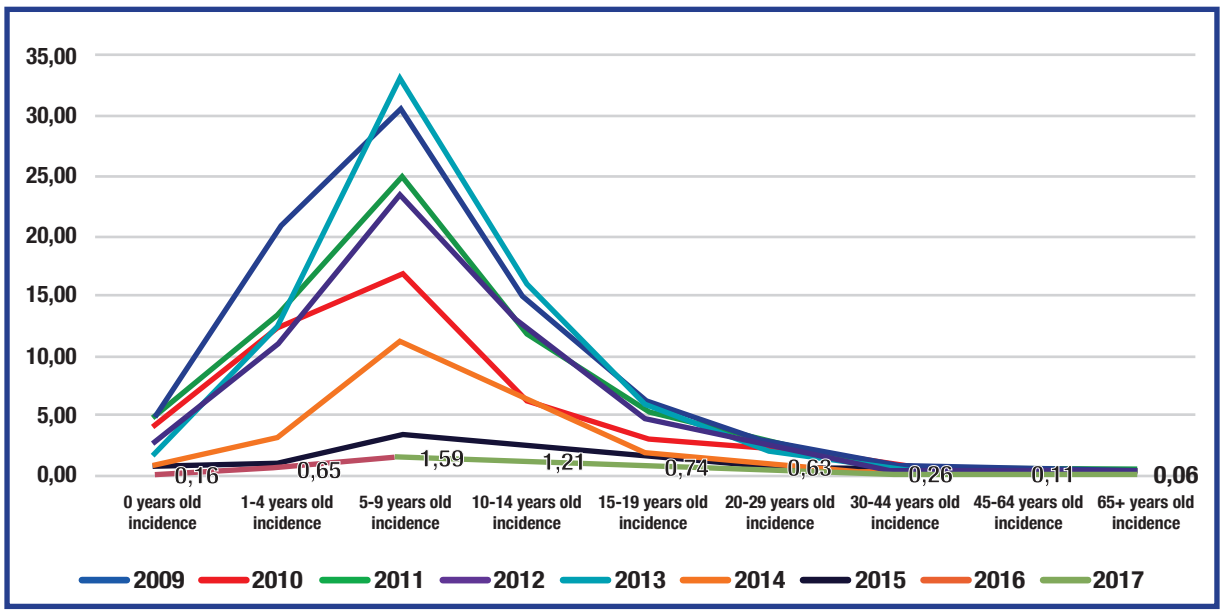


Figure 2 Variance in Hepatitis A Incidence (Per One Hundred Thousand) Based On Age Groups (Turkey, 2009 – 2017).

hygiene regulations, increased access to clean water resources, and improved social-economic conditions can contribute to reducing the incidence. Hepatitis A infection does not have a chronic phase.

Hepatitis A infections do not become chronic

HAV is still endemic in Turkey, but its prevalence is declining and the typical age at which the virus is contracted has shifted toward adolescence and young adulthood (Figure 2).

In general, the incidence of acute viral hepatitis A is declining, and there are no significant regional differences. According to 2017 data, the central and eastern Anatolian regions have the highest hepatitis A incidence (Figure 3).

HAV infection was responsible for11,000 deaths worldwide in 2015. This represents 0.8% of all viral hepatitis mortality (2).

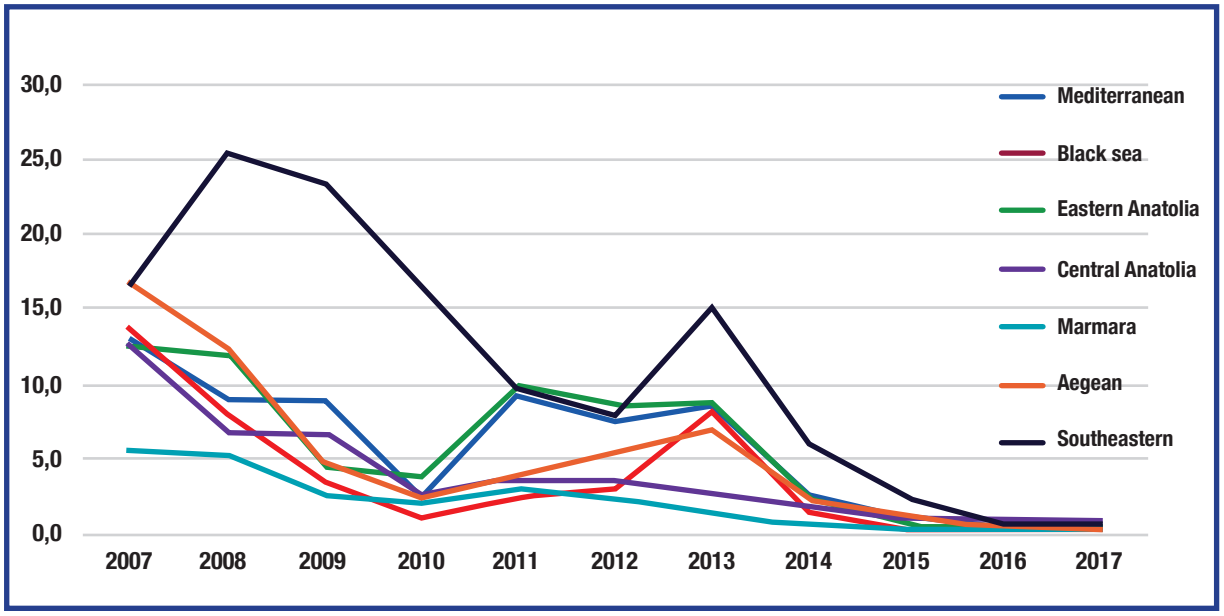


Figure 3 Hepatitis A Incidence (Per One Hundred Thousand) Based On Regions, Turkey, 2007-2017

2.1.2 High-Risk Populations for HAV Infection

- People with chronic hepatitis B virus (HBV)/hepatitis C virus (HCV) infection
- People with non-viral etiologies related to chronic liver disease
- People who require frequent blood and blood product transfusions
- Seronegative health-care professionals and students
- Daycare and nursing home workers
- MSM and bisexual men
- Intravenous drug users
- Seronegative people who travel to countries that have high hepatitis A prevalence
- People with HIV/AIDS

- Solid organ and bone marrow transplantation candidates and recipients
- National Medical Rescue Team (UMKE) participants
- Sewage workers

There is no specific treatment choice for HAV infection.

2.1.3 Tests for Diagnosis of Hepatitis A Infection

- Anti-HAV IgM (specific test)
- Liver injury tests and total bilirubin levels

2.1.4 Prevention of Hepatitis A Infection

The most important strategy for prevention of HAV infection is control of the main fecal-oral transmission route and prevention of food, water, and environmental contamination with the virus. A hygienic lifestyle, handwashing, and discipline among people who work in the food industry are crucial for avoiding person-to-person, intrafamilial, in-hospital, and public transmission. Another method of prevention is vaccination.

All infants are vaccinated against hepatitis A

Turkey's hepatitis A vaccination program has been implemented since 2012 for infants born since April 1, 2011. The hepatitis A vaccine is administered in two doses at six-month intervals, when the infant is aged 18 and 24 months. Those who are in high-risk populations for HAV infection should vaccinate against HAV after serological evaluation.

2.2 HEPATITIS B VIRUS INFECTION

2.2.1 General Information

The hepatitis B virus (HBV) is a small, double-stranded deoxyribonucleic acid (DNA) virus from the Hepadnaviridae family.

The main transmission routes are blood, sexual contact, and mother-to-baby during the antenatal and perinatal periods.

The use of uncontrolled blood or blood products, medical or dental interventions with non-sterile equipment, sharing of used syringes, razor blades, or toothbrushes, and tattooing or piercing applications with non-sterilized tools are frequent transmission routes.

The clinical course of HBV infection is dependent on the age at which the transmission took place. Generally, it is 90% asymptomatic in childhood and 20–30% symptomatic in adulthood. One percent of acute hepatitis B cases in adulthood have a fulminant course, and liver transplantation may be needed. HBV becomes chronic in 90% of cases when it is transmitted during the perinatal period, 20–30% of cases transmitted before the age of five, and 2–5% of cases transmitted during adulthood.

In Turkey, acute hepatitis B incidence is gradually decreasing (Figure 4).

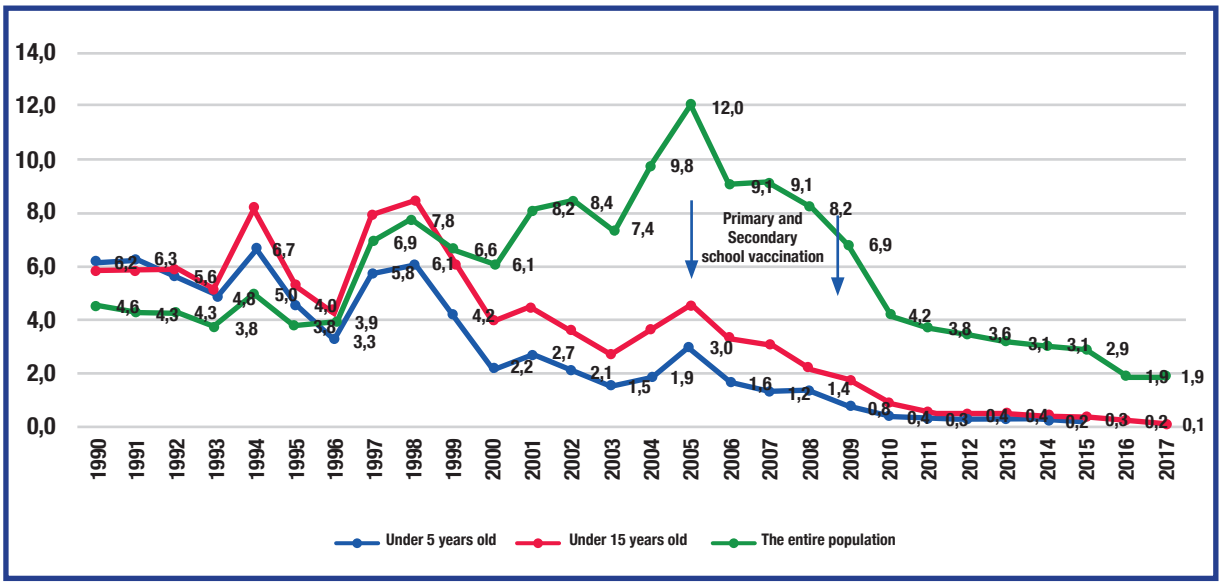


Figure 4 Acute Hepatitis B Incidence Based On Years and Age Groups (One Hundred Thousand), Turkey, 1990-2017

With the decrease in acute hepatitis B cases detected in our country, the disease has begun to emerge in older age groups.

In 2009, an epidemiological study reported that HBsAg positivity was detected in 4% and anti-HBc positivity was detected in 30.6% of people over the age of 18 (3). In Turkey, one third of people over the age of 18 have encountered HBV, and it is estimated that over 2 million adults are HBsAg-positive. It was found that only 12% of these were aware of their condition (3). This verifies that the level of awareness in our country is extremely low. In a systematic review of HBsAg positivity by age and region conducted between 1999 and 2009, HBsAg positivity was reported as 4.6%, and 3.3 million people were found to have chronic HBV. The lowest prevalence was found in the 0–14 age group (2.8%), and the highest prevalence was in the 25–34 age group (6.3%) (4).

It is estimated that cirrhosis or liver cancer may develop in approximately 25–40% of HBsAg-positive chronic hepatitis B patients, and 2.5–3% of cirrhotic patients will develop HCC every year. According to data provided by the Ministry of Health from between 2012 and 2016, around half of liver transplant cases were due to acute or chronic liver failure and HCC due to HBV infection (5).

The first five years of life constitute a critical time for the prevention of HBV infection. The United Nations consider chronic HBV infection incidence under the age of five to be an indicator of hepatitis campaign success (6).

2.2.2 High-Risk Populations for HBV Infection

- Health-care workers and students
- Hemodialysis patients
- Solid organ and bone marrow transplantation candidates and recipients
- People who undergo frequent blood and blood product transfusions
- Intravenous drug users

- Hepatitis B carriers/patients' seronegative family members who have contact with the patient
- Children of HBsAg-positive mothers
- People who have multiple sexual partners and people who have sex with sex workers
- MSM/bisexual men
- People with chronic liver disease other than hepatitis B
- People who work in prisons or detention centers and prisoners
- People who undergo risky dental procedures such as root treatment
- Barbers/hairdressers, manicurists and pedicurists
- People who plan to have tattoos or piercings
- People who are mentally disabled and live in nursing homes
- People who live in children's homes
- Security staff (soldiers and police officers who may have contact with blood or patients' excretions)
- People who perform first aid in emergency situations
- Immigrants who come from regions of high HBV prevalence

2.2.3 Tests for Diagnosis of Hepatitis B Infection

- HBsAg, anti-HBs and anti-HBc IgM and IgG
- For those who have HBsAg positivity, other tests should also be performed (HBeAg, anti-HBe, HBV DNA and anti-HDV total)
- Liver injury tests and total bilirubin levels

2.2.4 Prevention of Hepatitis B Infection

Vaccination is the most efficacious way to prevent HBV. HBV vaccination was added to the childhood vaccination program in 1998 and has been applied in three doses. The first dose of the vaccine was administered at the end of the second month after birth between 1998 and 2001 and then at birth since 2003. Changes to the HBV vaccination calendar by year are presented in Table 1.

In Turkey, a catch-up vaccination was administered to those who were in first or middle school between 2005 and 2009, and, theoretically, most people born in 1991 or later have completed their primary vaccination.

Table 1. Routine Hepatitis B Vaccination Calendar to be applied during childhood, 1998-2018

	Labor	End of 1st month	End of 2nd month	End of 3rd month	End of 4th month	End of 6th month	End of 9th month
Hep B (1998-2002)				I	II		III
Hep B (2003-September 2006)	I		II				III
Hep B (November 2006-2017)	I	II				III	

In addition to children, the hepatitis B vaccination is administered free of charge to some of the following risk groups:

- Hemodialysis patients, solid organ or bone marrow transplantation candidates or recipients, people who undergo frequent blood or blood product transfusion, intravenous drug users, unvaccinated people who live with HBV carriers, people who have multiple sexual partners or who have sex with sex workers, and MSM/bisexual men
- People who have chronic liver disease other than hepatitis B
- People who work in prison or detention centers and prisoners
- Barbers/hairdressers, manicurists and pedicurists, people who plan to have tattoos or pier-cings, people who are mentally disabled and live in nursing homes, people who live in children's homes, security staff (soldiers, police officers who may have contact with blood or patients' excretions), and people who perform first aid in emergency situations
- Staff who have contact with immigrants
- Health-care staff [medical faculties, nursing/midwifery schools, emergency department workers, (UMKE)]
- People who work in medical waste disposal

Turkey's vaccination rate has increased from 64% in 1994 to 98% in 2016. This has significantly reduced the occurrence of new chronic HBV infection cases. The incidence of HBV-related disease in children under five years of age has dropped to less than one in 100,000.

2.2.5 Treating HBV Infection

Antiviral treatment suppresses the HBV viral replication and stops the disease from progressing to cirrhosis and to other complications. Antiviral treatment also prevents the development of HCC. However, it is not possible to achieve complete viral clearance with current treatment modalities.

Currently, various antiviral drugs are available for the treatment of HBV infection. Effective antiviral drugs can be used according to the recommendations of national and international guidelines (7).

Viral hepatitis is the most important risk factor that threatens liver health in Turkey. For this reason, the Turkish Association for the Study of the Liver (TASL) and the Viral Hepatitis Society published the *Viral Hepatitis B, D and C: Diagnosis and Treatment Guidelines* in 2015, and these were updated in 2017 as *Diagnosis, management and treatment of hepatitis B,C,D virus infection: Turkey 2017 Clinical Practice Guidelines.* The main goals in HBV treatment are to prevent the development of cirrhosis, decompensation, and HCC by suppressing HBV replication, to reduce the need for liver transplantation, and to improve survival and quality of life.

In 2015, only 9% (22 million) of the 257 million people with HBV infection worldwide were known to be infected (Figure 5). As of 2015, only 8% (1.7 million) of diagnosed patients were included in the treatment. However, among the 22 million that have been diagnosed, the proportion of people eligible for treatment is unknown (1). The treatment consistency will affect the proportion of patients who have viral suppression (8).

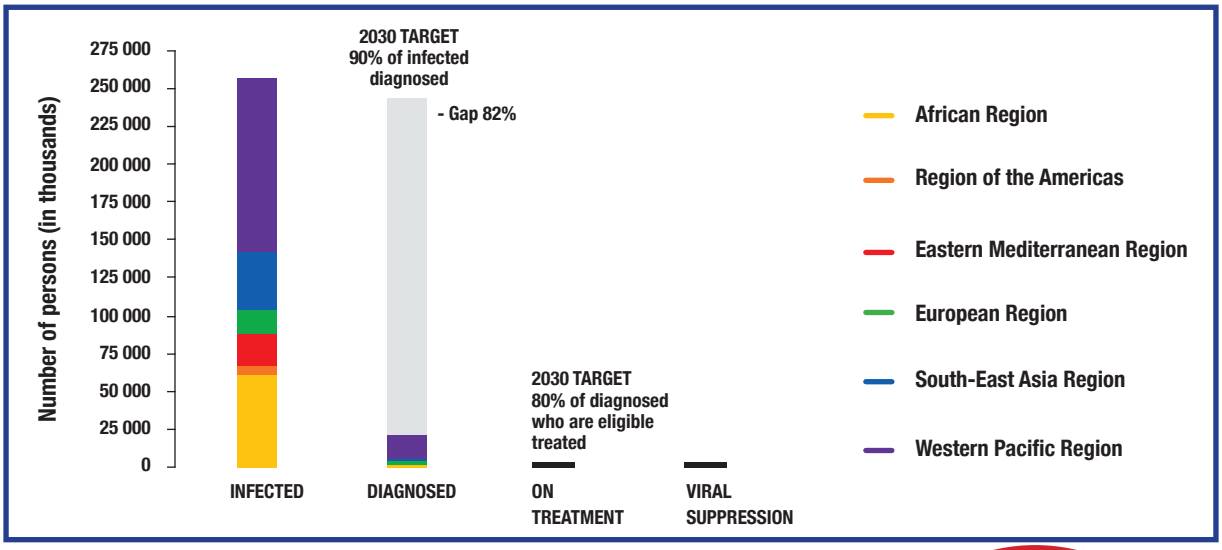


Figure 5 HBV Infection and Treatment Target, WHO, 2015

2.2.6 Global Prevalence of HBV Infection

In 2015, the global HBV prevalence for the general population was detected as 3.5%. The prevalence is highest in Africa (6.1%) and the Western Pacific Region (6.2%), which together account for 68% of infected patients (Figure 6). On average, 257 million people worldwide live with HBV infection. Given that 25.3% of the world's population is women of childbearing age, 65 million women have the potential to transmit their disease to their babies (9).

257
million persons live with HBV across the world

With increased HBV vaccination rates, the emergence of new chronic HBV infection cases has declined. In Africa, however, the rate is still 3%. It is expected that the global HBV epidemic will decrease in the long term, as the childhood chronic HBV infection rate decreases. However, when HBV-infected adults born before the implementation of the vaccination program cannot be diagnosed and treated, mortality rates due to HBV transmission and HBV complications will increase (1).

885.000
persons died from HBV-related liver diseases in 2015

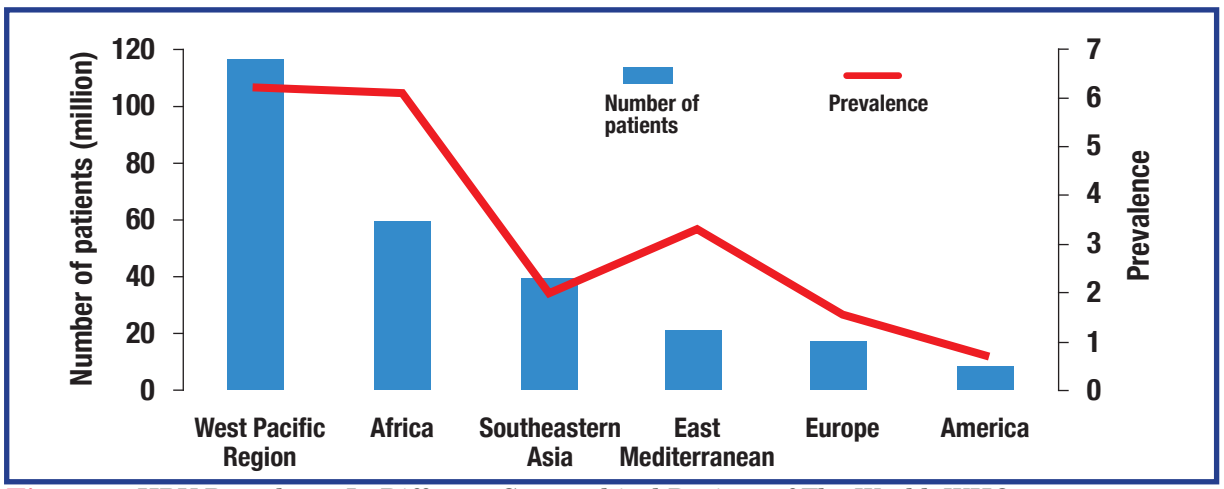


Figure 6 HBV Prevalence In Different Geographical Regions of The World, WHO, 2015

2.3 HEPATITIS C VIRUS INFECTION

2.3.1 General Information

HCV is a single-stranded RNA virus from the *Flaviviridae* family, *Hepacivirus* genus.

Transfusion of contaminated blood and blood products, intravenous drug use, and surgical and other invasive interventions are the most common routes of transmission, followed by sexual contact and mother-to baby transmission.

In a study published in 2012, it was reported that Turkey's anti-HCV prevalence was 0.5–1% (3, 10). Accordingly, it was estimated that approximately 250,000–550,000 people over 18 years of age were infected with HCV, and most of them were unaware of their situation.

In a study published in 2014 (11), it was estimated that, as of 2013, 514,000 people were infected with HCV (0.7%) (317,000-540,000) in Turkey. According to the same study, 81,300 (16%) people are infected with HCV each year, 5,500 new cases (1.1%) are detected (1.1%), and 4,200 cases (0.8%) receive treatment. While HCC cases numbered 2,230 in 2013, it is estimated that the number of HCCs will increase by 70% in 2030, and that liver-related deaths will increase by 70% by 2020 compared with 2013 data, and that decompensated and compensated cirrhosis will increase by 60% and 40% respectively (3, 10, 11).

According to 2016 Ministry of Health data, anti-HCV positivity in hemodialysis patients is 3.8%, 1.7% in peritoneal dialysis patients, 1.96% in renal transplant recipients, and 7.6% in liver transplant recipients.

HCV is the second most common reason for liver transplantation in Turkey. It is expected that the disease burden and mortality will increase over the next 20 years, if HCV is not treated. It is estimated that, by 2030, approximately 80,000 people will have developed cirrhosis secondary to HCV infection, 3,770 people may have developed HCC, and 3,420 people will die due to HCV infection (Figure 7).

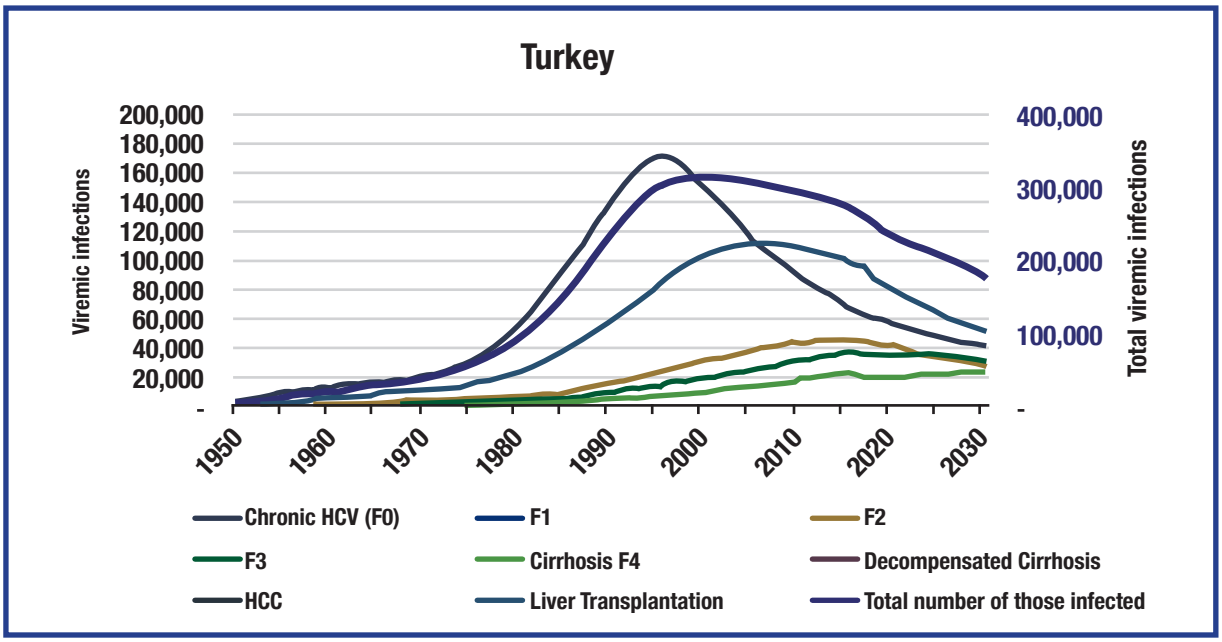


Figure 7 Change in HCV Disease Burden Over Time (16)

2.3.2 High-Risk Populations for HCV Infection

- People who underwent blood transfusions before 1996
- People who need frequent blood and blood product transfusions
- Intravenous drug users
- People who engage in risky sexual practices (e.g., sex workers, MSM/bisexual men, multiple sexual partners)
- People who undergo dental procedures and medical interventions
- Hemodialysis patients
- Organ transplant recipients
- People living in community facilities (prisons, daycare and nursing homes, and dormitories)
- People at risk of transmission through contact with family members
- People who share personal hygiene items
- People in certain occupations (e.g., health-care workers, barbers, and hairdressers)
- People who have presence of co-infection (HBV or HIV)
- People who have a history of tattoos, piercings and circumcision
- Children of anti-HCV positive mothers
- Immunocompromised patients

2.3.3 Tests to Diagnose HCV Infection

- Anti-HCV
- HCV-RNA test for those who test positive for anti-HCV
- Liver injury tests and total bilirubin levels

2.3.4 Treating HCV Infection

Following the discovery of HCV in 1989, research on its treatment achieved success during the last decade, with the development of new oral drugs with high antiviral activity that can inhibit different targets in HCV's life cycle.

In the treatment of HCV, the use of directly acting antivirals (DAAs), which inhibit HCV replication cycles, provides viral elimination and cure and has constituted significant progress in HCV treatment. DAA drugs, which have more acceptable side effects, are more easily tolerated, and can shorten the treatment period to 8–12 weeks, have completely replaced the interferon-based treatments that are administered intravenously (13, 15).

With DAA-based treatments, liver function was improved as well as disease progression, and cirrhosis and related complications and HCC development were reduced through the eradication of HCV. Additionally, all-cause mortality has been reduced in both compensated and decompensated cirrhotic patients through these treatments (16, 17). In view of the above, DAA-based treatment is a cost-effective approach.

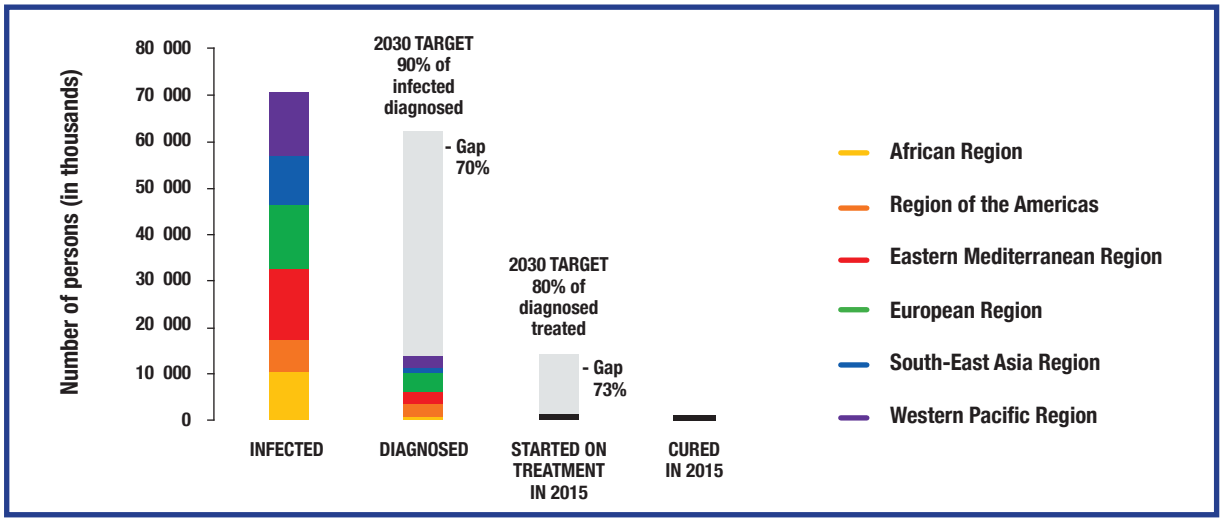


Figure 8 HCV Infection and Treatment Target, WHO, 2015

According to the WHO 2017 Global Hepatitis Report, only 20% (14 million) of 71 million HCV-infected people in 2015 were aware of their condition. The highest percentage of diagnosed patients was in America (36%) and the lowest was in Africa (6%). Globally, 7% of diagnosed patients (1.1 million) in 2015 and 13% of diagnosed patients (1.76 million) in 2016 underwent antiviral treatment (Figure 8) (1, 18).

Complications of HCV infection and the effect of new drugs on the cost of HCV treatment should also be considered. Although cost-effectiveness analyses of HCV treatment with DAA have shown that the treatment costs of all HCV-infected patients are too high to be met, the treatment of mild and advanced liver diseases is reported as cost-effective (19, 21).

There is no protective vaccine for HCV.

2.3.5 HCV Infection Prevalence and Incidence in the World

71 million persons worldwide are living with HCV

According to 2015 data, 71 million people live with chronic HCV. Research shows that HCV infection decreased during the second half of the twentieth century (1). However, 1.75 million new HCV infections were identified worldwide in 2015 (global incidence rate: 23.7/100,000). Unsafe health procedures (unsafe injections) and intravenous (IV) drug use have led to the emergence of new HCV cases. Accordingly, while the global incidence of HCV infection was shown to have decreased in 2015, partial increases may occur in some geographical regions. For example, the incidence of HCV infection in the US has declined over the years but doubled between 2010 and 2014 as a result of IV drug use (22). Additionally, in rural areas where HCV incidence was known to be low, incidence began to increase due to IV drug use. HIV and HBV transmissions have also increased as a result of IV drug use (1). HCV transmission has also been reported in HIV-infected homosexual patients in Europe, Australia, and the USA (23).

399.000
persons died because of HCV related liver disease

According to WHO data from 2015, the highest infection rates are in the eastern Mediterranean region (2.3%) (62,5/100,000) and Europe (1.5%) (61.8/100,000) (Figure 9).

People who inject drugs currently comprise 5.6 million (8%) of the chronic hepatitis C (CHC) patients across the world.

In comparison to HBV, HCV prevalence is much lower, and it is distributed heterogeneously. This group consists of IV drug users, homosexuals, and patients who live in regions where safe health-care services are unavailable. In this group, cases infected due to factors such as unsafe health-care-related injections have contributed to the transmission of HCV on a larger scale. This phenomenon is often referred to as the "cohort effect".

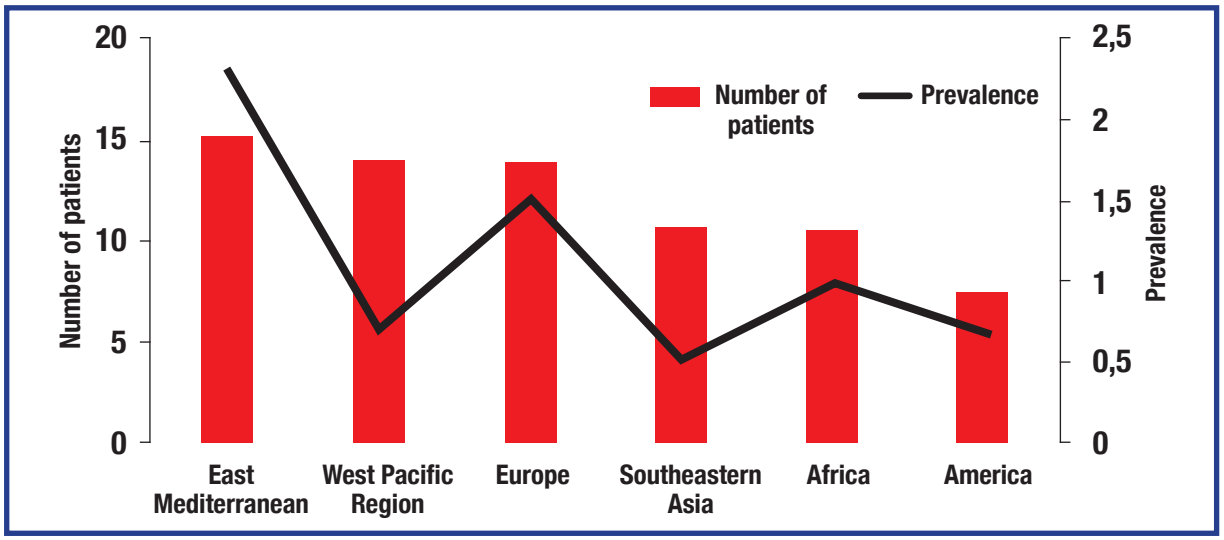


Figure 9 HCV Prevalence in Various Geographical Regions Across The World, WHO, 2015

2.4 HEPATITIS D VIRUS INFECTION

2.4.1 General Information

Hepatitis delta virus (HDV), is a non-enveloped RNA virus that causes hepatitis D infection. HDV can cause viral hepatitis only in those who have already contracted HBV infection. Its incubation period is approximately 14–51 days.

Transmission occurs mainly via the percutaneous route (e.g., in IV drug users), and via blood and blood products transfusion. The risk of sexual transmission and mother-to-baby transmission is low. However, it can cause an epidemic in IV drug users and hemodialysis patients.

In a retrospective study conducted in 2006, 2,182 HDV-related acute viral hepatitis, 6,612 inactive HBsAg carriers, 5,961 chronic hepatitis B (CHB), 1,264 cirrhosis, and 748 HCC cases were analyzed, and anti-HDV positivity was detected in 8.1% of the acute hepatitis B cases, 4.9% of the inactive HBsAg carriers, 20% of the chronic hepatitis B infection cases, 32.5% of the cirrhosis cases and 23% of the HCC cases (24). In 2009, 5,460 cases in patients over 18 years of age were screened for viral hepatitis for prevalence research in Turkey, and 2.8% anti-HDV positivity was detected in the HBsAg-positive cases (3).

Comparing the data before and after 1995, the prevalence of HDV in CHB and HBV-induced cirrhotic patients in middle and southeast Anatolia decreased from 29% to 12% and 38% to 27%, res-pectively. It decreased in west and southeast Anatolia from 38% to 20% and 66% to 46%, respectively. In recent years, although HDV has been in decline throughout the country, it remains a significant health problem in east and southeast Anatolia (25).

The prevalence of HDV infection varies worldwide. The endemic regions are Mongolia, Pakistan, sub-Saharan Africa, Romania, Albania, and Brazil. Five percent of people worldwide who are infected with HBV are co-infected with HVD (1).

2.4.2 Tests to Diagnose HDV Infection

HBsAg, anti-HBc IgM, anti-HDV IgM, and HDV RNA PCR are used for hepatitis D co-infection,

HBsAg, anti-HDV IgM, anti-HBc IgG, and HDV RNA are used for hepatitis D super-infection.

2.4.3 Treating HDV Infection

Pegylated interferon therapy is currently applied for the treatment of HDV infection. Due to its low success rate, more efficacious and tolerable treatment options are required. There is no protective vaccine for hepatitis D.

2.5 HEPATITIS E VIRUS INFECTION

2.5.1 General Information

Hepatitis E virus (HEV), a non-enveloped RNA virus, causes hepatitis E infection. HEV is a member of the *Hepeviridae* family.

Transmission occurs mainly via the fecal-oral route, person-to-person contact, and consumption of contaminated food/water and drinks. Other routes of transmission, such as transfusion and vertical transmission, have also been reported.

In Turkey, acute viral hepatitis E infection is seen sporadically. Acute hepatitis E infection rarely becomes chronic. The risk of HEV-related fulminant hepatitis and complications is high, particularly for patients who have undergone organ transplantation or immunosuppressive treatment and for pregnant women in the second and third trimesters.

Although the prevalence of HEV in Turkey varies across different regions (0-73%), the overall seroprevalence is detected as 6.3%. In 2015, anti-HEV seroprevalence was detected as 4.4% in blood donor samples (26). In another study conducted in 2009, in patients aged over 15 years, the prevalence of anti-HEV IgG was found to be 2.4% (27).

It is estimated that there are 20 million HEV-infected patients worldwide (3.3 million of whom have symptomatic acute hepatitis E) (28). According to WHO data, in 2015, HEV infection accounted for 3.3% of all viral hepatitis-related deaths, that is, 44,000 deaths.

2.5.2 Tests for Diagnosis of HEV Infection

Anti-HEV IgM, IgG, and HEV RNA tests are used to diagnose hepatitis E infection.

2.5.3 Treating HEV Infection

Acute hepatitis E generally does not require treatment. Chronic hepatitis E is treated in immunocompromised patients. There is no protective vaccination for hepatitis E in Turkey.

3. CHRONIC VIRAL HEPATITIS: DISEASE BURDEN, MORBIDITY AND MORTALITY

Viral hepatitis is defined as a global health problem by the WHO. July 28 has been designated World Hepatitis Day to raise awareness.

Many European Union member countries do not currently have a national plan or strategy. Even in countries that have developed evidence-based hepatitis policies, there are discrepancies between policy and practice, particularly in the areas of preventive strategies, treatment, and control protocols. For hepatitis to be prioritized as a major health problem in society, global efforts should be customized to special conditions at national and regional levels, and translated into preventive and control strategies.

In determining national strategies for addressing viral hepatitis, high-risk groups should be particularly emphasized. The identification of the high prevalence regions for HAV, HBV, HCV and HDV has been proposed, as well as organizing targeted awareness strategies, to inform the public about the disease, to prevent stigmatization, and to raise awareness among health-care workers.

Chronic viral hepatitis is an important health problem both in Turkey and worldwide, and constitutes the most prevalent cause of liver-related morbidity. Globally, HBV and HCV infections are the most common causes of cirrhosis and HCC. Another burden caused by viral hepatitis is the loss of productivity and deterioration of quality of life experienced by patients and their relatives (1, 21, 29). Due to these factors, chronic viral hepatitis constitutes a serious economic burden on health-care systems.

According to WHO data, 1.34 million deaths resulted from viral hepatitis in the world in 2015. This number was similar to the number of tuberculosis-related deaths (1.37 million deaths secondary to HIV-unrelated tuberculosis) and higher than HIV-related (1.06 million) and malaria-related (0.44 million) deaths. Complications of chronic HBV (66%) and HCV (30%), and to a lesser extent to HAV infection (0.8%) and HEV infection (3.3%) complications, accounted for 96% of these deaths (1). HBV and HCV infection can cause cirrhosis (720,000 deaths) and HCC (470,000 deaths) unless they are treated (Figure 10).

As a result of measures implemented between 2000 and 2015, mortality rates of HIV decreased from 1.46 million to 1.06 million, tuberculosis decreased from 1.67 million to 1.37 million, and malaria decreased from 0.86 million to 0.44 million. By contrast, death secondary to viral hepatitis has

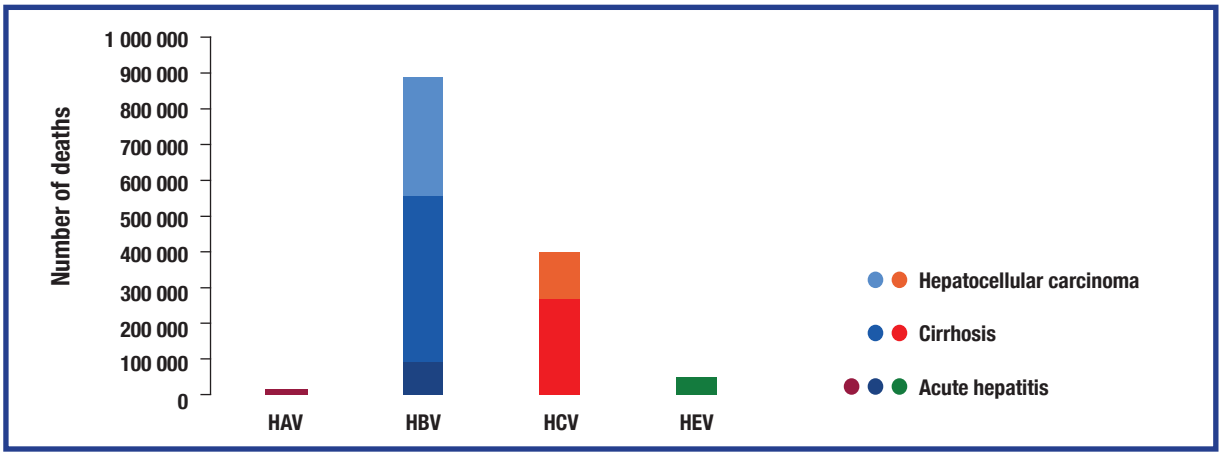


Figure 10 Viral Hepatitis-Related Deaths and Causes (WHO, 2015)

increased (Figure 11). Mortality increased from 1.1 million in 2000 to 1.35 million in 2015 (22% increase) (1). It is estimated that this figure will continue to rise unless HBV- and HCV-infected patients are diagnosed and treated with DAA.

Viral hepatitis-related deaths are caused by late complications of HBV and HCV

Viral hepatitis is mostly fatal in adults. Patients aged over 30 years have greater mortality than patients under 30 years (2.6/100,000 vs 34.3/100,000), and the majority (93%) of hepatitis-related deaths occur within this age group. Men have higher mortality rates than women (23.3/100,000 vs 13.2/100,000). There is also a regional age difference in HCC-related mortality rates: in sub-Saharan Africa, deaths secondary to HBV-related HCC occur at a much younger age (median age 38.9), while deaths are primarily seen in older age groups in the Western Pacific Region (median age 54.5) (1, 30).

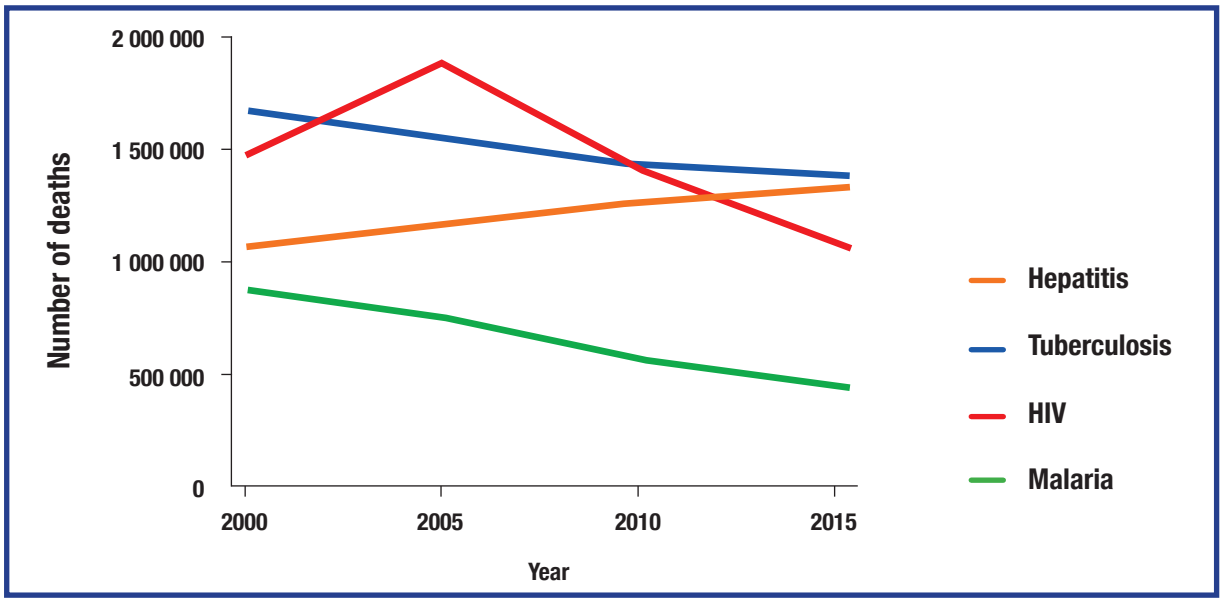


Figure 11 Annual Mortality Rates of Hepatitis, HIV, Tuberculosis and Malaria Across The World, WHO, 2000-2015

In Turkey, more than half (50–70%) of chronic liver disease, cirrhosis, and HCC cases are caused by viral hepatitis. In a large cohort study conducted in Turkey, 83% of HCC cases developed on the basis of viral hepatitis (31). According to data from the Ministry of Health, viral hepatitis-induced liver failure constituted 60% of all liver transplantations. According to a prospective statistical analysis model (Marcov Model), while the number of new HCV cases are expected to be reduced by 2030 (excluding possible immigrations), cirrhosis, liver cancer and liver-related due to chronic hepatitis C are expected to increase by 60-70%, and the need for liver transplantation is expected to increase by 70% (11).

Although the prevalence of HBsAg and anti-HCV in HCC patients varies from country to country, globally, viral hepatitis is the most common cause of HCC. In particular, HBV infection is as acknowledged as a leading cause of HCC. In case-control studies, the risk of HCC in individuals with chronic HBV infection varies with the effect of other risk factors and is reported to increase

by 5–15 times. Although between 70 and 90% of patients develop HCC on the basis of HBV-related cirrhosis, HCC may develop in non-cirrhotic patients (32). The risk of HCC development decreases with antiviral treatment (33). However, HCV infection is the cause of 27% of liver cirrhosis and 25% of HCC cases. In contrast to HBV infection, HCC develops mostly in patients with severe fibrosis and cirrhosis, while HCC rarely results from low-level fibrosis.

In the Technical Report of the European Center for Disease Prevention and Control in September 2010, data from 8 of 34 countries were evaluated, and significant differences were reported in the prevalence of both HBV and HCV among HCC patients in Europe. The highest prevalence of HBV was in Turkey and Greece, and the highest prevalence of HCV was in Italy (64% of HCC cases) in the European Union region. It was estimated that the highest prevalence of HBsAg among cirrhotic patients was in Turkey (64%), and the highest prevalence of anti-HCV was in Italy (61%) (34).

4. OBJECTIVES AND STRATEGIES OF THE PROGRAM

This national action plan has been generated with the aim of combating viral hepatitis. It should be noted that the Republic of Turkey's Ministry of Health in particular, all public and private institutions, and all individuals are responsible for the execution of this plan. The key aspects of the strategies for eliminating the public health problem of viral hepatitis are as follows: prevention studies, scanning, and dissemination of treatment.

AIM

The overall aim is to combat viral hepatitis using appropriate public health approaches:

- To decrease the number of new viral hepatitis cases and to reduce fatalities among viral hepatitis sufferers by preventing and mitigating complications and improving the care given to viral hepatitis patients.
- To reduce the negative socio-economic impact of viral hepatitis on various aspects of society.

The strategies are grouped under the following headings (see Figure 12).

Strategy 1. Raising awareness

Strategy 2. Increasing immunization

Strategy 3. Strengthening viral hepatitis surveillance

Strategy 4. Reducing mother-to-child transmission

Strategy 5. Increasing access to treatment

Strategy 6. Ensuring the safety of all blood products

Strategy 7. Preventing viral hepatitis transmission in persons who inject drugs

Strategy 8. Preventing health services-related hepatitis

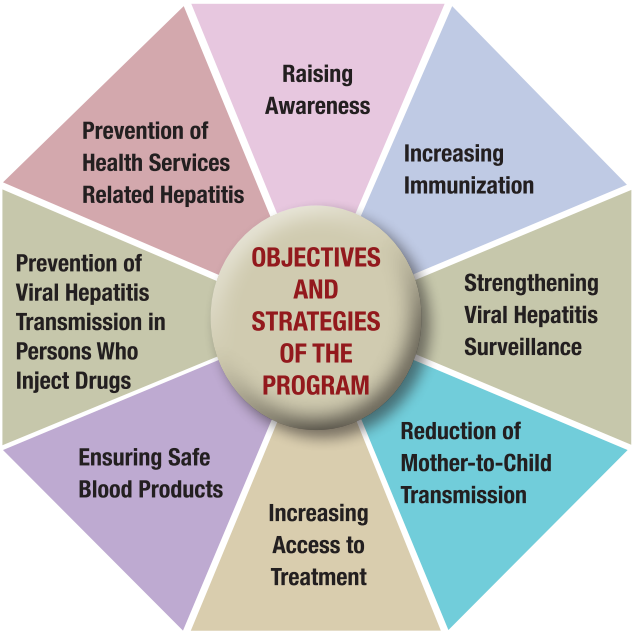


Figure 12 The Eight Strategic Directions of Ministry of Health On Viral Hepatitis, 2018-2023.

STRATEGY 1. RAISING AWARENESS

The most crucial step in the prevention of viral hepatitis is protection against viral hepatitis. As many people who have the disease exhibit no signs or symptoms, while many more do not consider themselves to be at risk of contracting viral hepatitis, awareness studies are particularly important.

Many people having viral hepatitis are unaware of their own disease

AIM I.	To raise public awareness of viral hepatitis
OBJECTIVE I.I.	To increase society's knowledge and awareness about viral hepatitis
ACTIVITIES	**1.** Preparing and distributing materials that address transmission, prevention, and immunization issues **2.** Preparing materials on the disease, its transmission routes, prevention, and treatment for specific risk groups **3.** Preparing a website providing information on vaccination and immunization **4.** Preparing informative videos about viral hepatitis to be broadcast on IP-TV screens **5.** Ensuring that topics related to viral hepatitis are included in the curricula of schools that train students to work in hairdressing salons, beauty salons, and barbershops **6.** Ensuring that topics related to viral hepatitis are included in the educational program network accessible to primary and secondary school students **7.** Regulating educational activities related to viral hepatitis in schools by health institutions **8.** Cooperating with professional practices that have a vital role in the transmission of the disease (beauty salons, barbershops, hairdressing salons, acupuncturists, tattoo and piercing studios, etc.) to raise awareness of disease, prevention, and transmission **9.** Educating residents in communal living areas, such as nursing homes, military units, prisons, and detention centers **10.** Educating special risk groups **11.** Educating employees in the workplace with on-site physicians **12.** Organization of events for World Hepatitis Day

STRATEGY 2. INCREASING IMMUNIZATION

Vaccines are available for hepatitis A and B, and are routinely administered to all infants in Turkey as part of the childhood vaccination schedule. In Turkey, vaccination rates for hepatitis B are higher than the level that WHO aims to reach. Nevertheless, it should be noted that keeping these rates at intended levels will be beneficial in preventing an HBV epidemic. In addition, vaccination of risk groups and opportunities for catch-up vaccination programs should be utilized.

AIM II.	To increase and maintain immunity throughout society
OBJECTIVE II.I.	To achieve and maintain a minimum 97% immunization rate in each province and district with routine vaccination in childhood
ACTIVITIES	**1.** Maintaining a high rate (97%) of first-dose HBV vaccination in the first 24 hours of life for newborn infants **2.** Ensuring the continuation of vaccination practices in accordance with the routine childhood vaccination schedule **3.** Strengthening routine immunity studies in temporary camps and humanitarian aid regions
OBJECTIVE II.II.	To determine the vaccination levels of risk groups and increase vaccination coverage by 50%
ACTIVITIES	**1.** Determining vaccination levels among risk groups **2.** Increasing vaccination coverage among all health-care professionals **3.** Increasing vaccination coverage in patients with chronic illnesses **4.** Extending HBV vaccination coverage to other risk groups and specific risk groups (sex workers, people who inject drugs)

STRATEGY 3. STRENGTHENING VIRAL HEPATITIS SURVEILLANCE

AIM III.	To strengthen surveillance of viral hepatitis
OBJECTIVE III.I.	To ensure that 95% of diagnosed cases are notified in a timely, accurate, and consistent manner
ACTIVITIES	**1.** Ensuring that notifications of acute or chronic viral hepatitis are delivered **2.** Updating primary care, secondary care and tertiary care physicians and health-care professionals about notifications of viral hepatitis **3.** Developing software support programs for diagnosis of HBV and HCV **4.** Strengthening surveillance in migrant health centers, temporary refuge camps, and humanitarian aid areas
OBJECTIVE III.II	To obtain and provide feedback on the data that are analyzed annually
ACTIVITIES	**1.** Collecting epidemiological data for viral hepatitis and detection of susceptible populations **2.** Calculating the viral hepatitis burden using relevant models **3.** Ensuring routine evaluation of collected data on HCC
OBJECTIVE III.III	To plan and conduct surveys to monitor changes in risk groups
ACTIVITIES	**1.** Extending support to epidemiological studies in cooperation with universities, CSOs and other partners **2.** Collecting data on risk groups through seroprevalence studies **3.** Improving measures for monitoring vaccine rates and adverse effects following vaccination practices through information systems

STRATEGY 4. REDUCTION OF MOTHER-TO-CHILD TRANSMISSION

In endemic areas, HBV is mainly transmitted to newborn infants from their infected mothers. Prevention of transmission from mothers to their infants should be acknowledged as a process that involves several steps, including prenatal tests, patient follow-ups during pregnancy, administration of treatment when necessary, safe delivery, vaccination or administration of immunoglobulins to newborns within the first 12 hours after birth, and strengthening postpartum follow-up procedures. Vaccination immediately after birth is of particular importance in preventing the disease. The fact that most deliveries occur in health centers with follow-up care provided by doctors increases the rate of postnatal vaccinations. Additionally, Turkish health legislation permits the treatment of pregnant women in cases of high viral load. In the Turkish context, these factors are considered to be strengths in the prevention of mother-to-child transmission.

AIM IV.	To prevent mother-to-child HBV transmission
OBJECTIVE IV.	To determine the percentage of HBsAg-positive mother-to-baby transmissions and reduce it by 90%
ACTIVITIES	**1.** Evaluating hepatitis B during the periodic examinations of pregnant women and providing information about personal protection methods after pregnancy **2.** Elevating the rates of examinations of pregnant women in terms of hepatitis B postpartum **3.** Providing vaccinations and administration of immunoglobulins to newborns that are identified as hepatitis B-positive according to the maternal seroprevalence **4.** Providing follow-up care to pregnant women with hepatitis positivity during the postpartum period and providing guidance regarding treatment

STRATEGY 5. INCREASING ACCESS TO TREATMENT

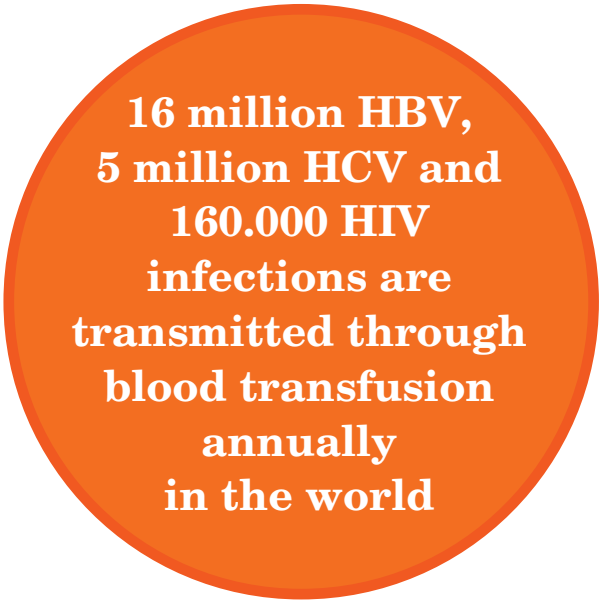
With effective treatments, the morbidity and mortality rates of HBV and HCV infections will decrease significantly. It is essential that patients begin receiving treatment as soon as possible and that medical examinations are conducted regularly. Although 95% of hepatitis C cases are fully curable, hepatitis B requires lifelong treatment.

AIM V.	To increase the accessibility and sustainability of appropriate treatment options in order to reduce cirrhosis, HCC, and mortality due to viral hepatitis
OBJECTIVE V.	To increase the cumulative percentage of patients with chronic hepatitis B, C, and D that undergo treatment
ACTIVITIES	**1.** Establishing viral hepatitis patient schools/dedicated hepatitis nursing training **2.** Raising awareness that hepatitis B-positive cases, as well as their family members, may be referred to secondary and tertiary health-care institutions by primary care physicians for treatment and follow-up care

STRATEGY 6. ENSURING SAFE BLOOD PRODUCTS

Blood transfusion is a critical route by which blood-borne viruses, such as HIV and the hepatitis viruses, are transmitted. In blood centers, the careful implementation of appropriate procedures during the collection of blood or blood products from people, as well as screening or processing, will be critical in preventing transmission. According to WHO data, 16 million HBV, 5 million HCV, and 160 thousand HIV infections are transmitted annually via blood transfusion.

In Turkey, all blood donors are screened for HBV, HCV, HIV, and syphilis. Despite the established hemovigilance system, training programs are required to ensure more efficient functionality of the system. To prevent unnecessary blood transfusions and to reduce the need for transfusions, patient blood management programs must be implemented.



AIM VI.	To ensure the use of safe blood products
OBJECTIVE VI.	To eliminate the risk of hepatitis transmission due to the use of blood products
ACTIVITIES	**1.** Providing optimal conditions for donor evaluation in blood donations **2.** Reducing the directed donation rate and providing all blood components from voluntary and regular blood donors. **3.** Increasing the utilization of molecular methods in the screening process by 100%. **4.** Implementing patient blood management projects and reduction of unnecessary blood transfusion rates **5.** Delivering training activities aimed at ensuring more effective operation of the hemovigilance systems **6.** Developing training and supervision operations for effective management of blood services

STRATEGY 7. PREVENTION OF VIRAL HEPATITIS TRANSMISSION IN INTRAVENOUS DRUG USERS

IV drug use is a risk factor for blood-borne diseases, such as HAV, HBV, HCV, HDV, and HIV, and has become a growing problem in Turkey. HCV, in particular, spreads rapidly among people in this group. Therefore, the implementation of measures to address this issue will contribute to the control of several diseases.

AIM VII.	To prevent the transmission of viral hepatitis in IV drug users
OBJECTIVE VII.	To reduce by 50% the number of viral hepatitis cases caused by IV drug use
ACTIVITIES	**1.** Raising awareness regarding viral hepatitis among staff working in addiction treatment centers **2.** Training and educating applicants to the centers for drug addiction treatment **3.** Raising awareness regarding viral hepatitis among IV drug users **4.** Conducting HBV and HCV screening of IV drug users who have undergone treatment in drug addiction treatment centers **5.** Ensuring vaccination against hepatitis B among IV drug users **6.** Referring patients with HBV or HCV for treatment

STRATEGY 8. PREVENTION OF HEALTH SERVICES-RELATED HEPATITIS

The regular and widespread implementation of infection control measures has significantly reduced the transmission of viral hepatitis among health professionals and health-care-associated viral hepatitis transmission. The increased use of oral treatment options will prevent unnecessary injections. Advances in appropriate storage and disposal of medical waste are also promising in this regard.

AIM VIII.	To prevent health services-related hepatitis
OBJECTIVE VIII.	To increase health-care-associated viral hepatitis prevention studies (safe invasive practices, training, immunization, medical waste control, efficient sterilizations and disinfection)
ACTIVITIES	**1.** Raising awareness among health-care workers regarding safe invasive practices **2.** Raising awareness among health-care workers regarding medical services-related viral hepatitis transmission **3.** Increasing vaccination rates among health-care workers **4.** Enhancing safety and control in sterilization and disinfection services **5.** Complying with and encouraging compliance with universal rules for medical waste disposal **6.** Preventing hepatitis transmission by enhancing the precautions adopted during invasive procedures

5. ACTION PLANS FOR TURKEY'S VIRAL HEPATITIS PREVENTION AND CONTROL PROGRAM (2018-2023)

Table 5.1. Action Plan for Raising Awareness

STRATEGY 1. RAISING AWARENESS				
AIM I. To raise public awareness of viral hepatitis				
OBJECTIVE I.I. To increase society's knowledge and awareness about viral hepatitis				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Preparing and distributing of materials that address transmission, prevention, and immunization issues	GD of Public Health GD for Health Promotion	GD of Public Hospitals Universities Other Civil Society Organizations	2018-2023	1. Number of distributed materials (banners, brochures)
2. Preparing materials on the disease, transmission routes, prevention, and treatment for specific risk groups	GD of Public Health GD for Health Promotion	GD of Public Hospitals Universities Other Civil Society Organizations	2018-2023	1. Number of distributed materials (banners, brochures)
3. Preparing a website containing information regarding vaccination and immunization	GD of Public Health	Universities	2018-2023	1. Use of the website
4. Preparing informative videos about viral hepatitis to be broadcasted on IP-TV screens	GD for Health Promotion	GD of Public Health	2018-2023	1. Broadcasting of the informative videos on IP-TV screens

GD: General Directorate

Table 5.1. Action Plan for Raising Awareness

STRATEGY 1. RAISING AWARENESS				
AIM I. To raise public awareness of viral hepatitis				
OBJECTIVE I.I. To increase society's knowledge and awareness about viral hepatitis				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Ensuring that topics related to viral hepatitis are included in the curricula of schools that train students to work in hairdressing salons, beauty salons, and barbershops	GD of Public Health	Ministry of Education Other Civil Society Organizations	2018-2023	1. Update of topics in the current training program
2. Ensuring that the topics related to viral hepatitis are included in the educational program network accessible to primary and secondary school students	GD of Public Health	Ministry of Education Other Civil Society Organizations	2018-2023	1. Publication of the prepared materials in the Educational Information Network (EIN) application 2. Preparation and distribution of materials about safe blood donation
3. Regulating educational activities related to viral hepatitis in schools by health institutions	GD of Public Health	Ministry of Education Other Civil Society Organizations Provincial Health Directorate	2018-2023	1. Number of educational activities
4. Cooperating with professional practices that have a vital role in the transmission of the disease (beauty salons, barbers, hairdressers, acupuncturists, tattoo and piercing studios, ear piercing, etc.) to raise awareness of disease, prevention and transmission	GD of Public Health	Ministry of Education Other Civil Society Organizations Provincial Health Directorate	2018-2023	1. Number of educational activities 2. Number of materials distributed

GD: General Directorate

Table 5.1. Action Plan for Raising Awareness

STRATEGY 1. RAISING AWARENESS				
AIM I. To raise public awareness of viral hepatitis				
OBJECTIVE I.I. To increase society's knowledge and awareness about viral hepatitis				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Educating residents in communal living areas, such as nursing homes, military units, prisons, and detention centers	GD of Public Health	Ministry of National Defense Ministry of Justice Ministry of Family, Labor, and Social Services Provincial Health Directorates Other Civil Society Organizations	2018-2023	1. Number of training sessions 2. Number of trainees
2. Educating special risk groups	GD of Public Health	GD of Public Hospitals Universities Other Civil Society Organizations Provincial Health Directorates	2018-2023	1. Number of training sessions 2. Number of trainees
3. Educating employees at the workplace with the on-site physicians	GD of Public Health	Ministry of Family, Labor, and Social Services Other Civil Society Organizations Provincial Health Directorates	2018-2023	1. Number of training sessions 2. Number of trainees
4. Organizing events for World Hepatitis Day	GD of Public Health	GD for Health Promotion Universities Other Civil Society Organizations Provincial Health Directorates	2018-2023	1. Activities in various provinces on World Hepatitis Day

GD: General Directorate

Table 5.1. Action Plan for Raising Awareness

STRATEGY 1. RAISING AWARENESS				
AIM II. To raise awareness of medical personnel on viral hepatitis				
OBJECTIVE II.I. Increasing the knowledge and awareness of 90% of health-care professionals about viral hepatitis				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Including viral hepatitis as a topic in pre- and post-graduate educational programs	GD of Public Health	Universities Other Civil Society Organizations	2018-2023	1. Presentations on viral hepatitis in student and post-graduate congresses
2. Organizing seminars or sessions in health-related congresses on viral hepatitis, discrimination, and stigmatization	GD of Public Health	Universities Other Civil Society Organizations	2018-2023	1. Number of congresses and seminars on viral hepatitis
3. Educating health-care professionals in health-care institutions, including all other health workers and other personnel working outside the class of health services, in the field of viral hepatitis	GD of Public Health	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations Infection Control Committees Provincial Health Directorates	2018-2023	1. Preparation of training modules 2. Number of training sessions and trainees 3. Number of periodic training sessions organized by infection control committees and the number of trainees

GD: General Directorate

Table 5.1. Action Plan for Raising Awareness

STRATEGY 1. RAISING AWARENESS				
AIM II. To raise awareness of medical personnel on viral hepatitis				
OBJECTIVE II.I. Increasing the knowledge and awareness of 90% of health-care professionals about viral hepatitis				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
4. Educating family care physicians about viral hepatitis and vaccine risk groups	GD of Public Health	Universities Other Civil Society Organizations	2018-2023	1. Addition of modules into The Family Medicine Professional Development Program (AHUZEM) training sessions 2. Preparation of training modules on viral hepatitis for family physicians and providing in-service training 3. Delivery of training modules on viral hepatitis in orientation training of family physicians 4. Notification of family physicians about vaccination risk groups (official letters and emails) 5. Organization sessions on viral hepatitis in family medicine congresses
5. Educating non-physicians (nurses, midwives, and emergency medical technicians) who provide services in primary health-care institutions on disease and vaccine risk groups	GD of Public Health	Provincial Health Directorates	2018-2023	1. Number of non-physician staff trained in primary health-care institutions and number of training sessions
6. Educating emergency health-care service providers	GD of Public Health	GD of Emergency Health Services	2018-2023	1. Inclusion of viral hepatitis and prevention methods in emergency health-care programs

GD: General Directorate

Table 5.2. Action Plan for Increasing Immunization

STRATEGY 2. INCREASING IMMUNITY				
AIM II. To increase and maintain community immunity				
OBJECTIVE II.II. To achieve and maintain at least a 97% immunization rate in each dose at each province and district in childhood routine vaccination				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Maintaining a high rate (97%) of first-dose HBV vaccination in the first 24 hours for newborns	GD of Public Health GD of Public Hospitals GD of Health Services	Universities Provincial Health Directorate	2018-2023	1. The rate of HBV first-dose vaccination to be 97% and higher
2. Ensuring the continuation of vaccination practices in accordance with routine childhood vaccination schedules	GD of Public Health	GD of Public Hospitals GD of Health Services Universities	2018-2023	1. The rate of HBV third-dose vaccination to be 97% and higher
3. Strengthening routine 'immunization schedules in temporary camps and humanitarian aid regions	GD of Public Health	Other Civil Society Organizations Provincial Health Directorate GD of Migration Management	2018-2023	1. Preparation and distribution of posters and brochures with information on immunization in Arabic 2. Increasing vaccination rates in temporary sheltering camps and humanitarian aid areas

GD: General Directorate

Table 5.2. Action Plan for Increasing Immunization

STRATEGY 2. INCREASING IMMUNITY				
AIM II. To increase and maintain community immunity				
OBJECTIVE II.III. Determination of the vaccination level of risk groups and increasing vaccination coverage by 50%				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Determining vaccination levels among risk groups	GD of Public Health	GD of Health Information Systems	2018-2023	1. Reporting of vaccinations of risk groups via information systems
2. Increasing vaccination coverage among all health-care professionals	GD of Public Health	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations	2018-2023	1. Percentage of health-care workers immunized with the vaccine
3. Expanding vaccination coverage among patients with chronic disease	GD of Public Health	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations	2018-2023	1. Percentage of people immunized with the vaccine
4. Extending HBV vaccination coverage to include other risk groups and specific risk groups (e.g., sex workers, IV drug users)	GD of Public Health	Ministry of Family, Labor, and Social Services Ministry of Education Ministry of Environment and Urbanization	2018-2023	1. Percentage of people in risk groups immunized with the vaccine

GD: General Directorate. **HBV:** Hepatitis B Virus. **IV:** Intravevenous

Table 5.3. Action Plan for Strengthening Viral Hepatitis Surveillance

STRATEGY 3. STRENGTHENING VIRAL HEPATITIS SURVEILLANCE				
AIM III. To strengthen surveillance of viral hepatitis				
OBJECTIVE III.I. To ensure that 95% of the diagnosed cases are notified in a timely, accurate, and consistent manner				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Ensuring notifications of acute or chronic viral hepatitis	GD of Public Health	GD of Health Information Systems Social Security Institution	2018-2023	1. Data collection of decision support system and its evaluation
2. Updating primary care, secondary care and tertiary care physicians and health-care professionals regarding notifications of viral hepatitis	GD of Public Health	GD of Public Hospitals Universities	2018-2023	1. Number of training sessions on viral hepatitis notifications
3. Developing software support programs for diagnosis of HBV and HCV	GD of Public Health	GD of Health Information Systems GD of Health Services GD of Public Hospitals Universities	2018-2023	1. Ensuring that warning reports are visible in health information systems 2. Ensuring that the warning is monitored through hospitals' quality management systems 3. Ensuring that warnings appear on the hospital surveillance officers' screens
4. Strengthening surveillance in migrant health centers, temporary refuge camps, and humanitarian aid areas	GD of Public Health	GD of Health Information Systems	2018-2023	1. Completion and continuation of necessary basic training for health-care personnel working in migrant health centers

GD: General Directorate. **HBV:** Hepatitis B Virus. **HCV:** Hepatitis C Virus

Table 5.3. Action Plan for Strengthening Viral Hepatitis Surveillance

STRATEGY 3. STRENGTHENING VIRAL HEPATITIS SURVEILLANCE				
AIM III. To strengthen surveillance of viral hepatitis				
OBJECTIVE III.II. Obtaining and providing feedback on the data that is analyzed annually				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Collecting epidemiological data on viral hepatitis and detection of susceptible populations	GD of Public Health GD of Public Hospitals Universities	GD of Health Information Systems Other Civil Society Organizations	2018-2023	1. Publication of study reports
2. Calculating the viral hepatitis burden using relevant models	GD of Public Health GD of Public Hospitals Universities	GD of Health Information Systems Other Civil Society Organizations	2018-2023	1. Publication of study reports
3. Ensuring routine evaluation of collected data on HCC	GD of Public Health	GD of Health Information Systems GD of Public Hospitals Universities	2018-2023	1. Reporting of HCC data

GD: Genera Directorate. **HCC:** Hepatocellular carcinoma

Table 5.3. Action Plan for Strengthening Viral Hepatitis Surveillance

STRATEGY 3. STRENGTHENING VIRAL HEPATITIS SURVEILLANCE				
AIM III. To strengthen surveillance of viral hepatitis				
OBJECTIVE III.III. Planning and conducting surveys to monitor changes in risk groups				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Extending support to epidemiological studies in cooperation with universities, CSOs, and other partners	GD of Public Health	Universities Other Civil Society Organizations	2018-2023	1. Publication of study reports
2. Collecting data on risk groups through seroprevalence studies	GD of Public Health	Ministry of Interior GD of Public Hospitals GD of Health Services GD of Health Information Systems Universities Other Civil Society Organizations	2018-2023	1. Publication of study reports
3. Improving monitoring of vaccine rates and adverse effects following vaccination practices through information systems	GD of Public Health	GD of Health Information Systems	2018-2023	1. Reporting of adverse reactions to vaccines through health information systems

CSO: Civil Society Organizations. **GD:** General Directorate.

Table 5.4. Action Plan for Preventing Mother-to-Child HBV Transmission

STRATEGY 4. REDUCTION OF MOTHER-TO-CHILD TRANSMISSION				
AIM IV. To prevent mother-to-child HBV transmission				
OBJECTIVE IV. To determine the percentage of HBsAg-positive mother-to-baby transmission and reduce it by 90%				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Evaluating of hepatitis B during the periodic examinations of pregnant women and provision of information about personal protection methods after pregnancy	GD of Public Health	Universities GD of Public Hospitals GD of Health Services	2018-2023	1. Publication of the algorithm in the Prenatal Care Guidelines 2. Number of training sessions given to pregnant women 3. Percentage of trained pregnant women
2. Increasing the rate of examination of pregnant women in terms of hepatitis B postpartum	GD of Public Health	Universities GD of Public Hospitals GD of Health Services GD of Health Information Systems	2018-2023	1. Announcement of prenatal screening for pregnant women 2. Number of pregnant women examined 3. Percentage of positivity in examined pregnant women
3. Providing vaccination and administrating immunoglobulins to newborns identified as hepatitis B-positive according to the maternal seroprevalence	GD of Public Health	Universities GD of Public Hospitals GD of Health Services	2018-2023	1. Percentage of HBIG-treated infants born from HBsAg-positive mothers
4. Providing follow-up care to pregnant women with hepatitis positivity and provision of guidance with regard to treatment	GD of Public Health	Universities GD of Public Hospitals GD of Health Services	2018-2023	1. Percentage of pregnant women receiving treatment among pregnant women followed during the postpartum period

HBsAg: Hepatitis B surface antigen. **GD:** General Directorate. **HBV:** Hepatitis B Virus. **HBIG:** Hepatitis B Immunoglobulin.

Table 5.5. Action Plan for Increasing Access to Treatment

STRATEGY 5. INCREASING ACCESS TO TREATMENT				
AIM V. To increase the accessibility and sustainability of appropriate treatment options in order to reduce cirrhosis, HCC, and mortality due to viral hepatitis				
OBJECTIVE V. Increasing the cumulative percentage of patients with chronic hepatitis B, C and D that undergo treatment				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Establishing of viral hepatitis patient schools/dedicated hepatitis nursing training	GD of Public Health GD of Health Services	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations	2018-2023	1. Number of viral hepatitis units 2. Tracking the number of patients who were trained by determining the operation code via communiqué on health-care practices
2. Raising awareness that hepatitis B-positive cases, as well as their family members, may be referred to secondary and tertiary health-care institutions by primary care physicians for treatment and follow-up care	GD of Public Health	GD of Public Hospitals GD of Health Services Provincial Health Directorate Universities	2018-2023	1. Official letters

HCC: Hepatocellular carcinoma. **GD:** General Directorate.

Table 5.6. Action Plan for Ensuring the Safe Use of Blood Products

STRATEGY 6. ENSURING SAFE USE OF BLOOD PRODUCTS				
AIM VI. To increase the accessibility and sustainability of appropriate treatment options in order to reduce cirrhosis, HCC, and mortality due to viral hepatitis				
OBJECTIVE VI. To eliminate the risk of hepatitis transmission due to the use of blood products				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Providing optimal conditions for donor evaluation during blood donations	GD of Health Services	GD of Public Health Turkish Red Crescent	2018-2023	1. Number of training sessions for physicians who interrogates the blood donors 2. Percentage of those trained by physicians who interrogates the blood donors
2. Reducing the directed donation rate, and provision of all blood components from voluntary and regular blood donors.	GD of Health Services	GD of Public Health Turkish Red Crescent	2018-2023	1. Number of posters and brochures distributed to family physicians 2. Number of training sessions delivered to family physicians on the importance of blood donation 3. Preparation of modules for family physicians on the importance of blood donations
3. 'Increasing utilization of molecular methods in the screening process by 100%.	GD of Health Services	GD of Public Health Turkish Red Crescent	2018-2023	1. The need for blood supply to gradually reach 100% by 2023

HCC: Hepatocellular carcinoma. **GD:** General Directorate.

Table 5.6. Action Plan for Ensuring the Safe Use of Blood Products

STRATEGY 6. ENSURING SAFE USE OF BLOOD PRODUCTS				
AIM VI. To increase the accessibility and sustainability of appropriate treatment options in order to reduce cirrhosis, HCC, and mortality due to viral hepatitis				
OBJECTIVE VI. To eliminate the risk of hepatitis transmission due to the use of blood products				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
4. Implementing patient blood management projects and reduction of unnecessary blood transfusion rates	GD of Health Services	GD of Public Health Higher Education Institutions Social Security Institution Turkish Red Crescent Universities Other Civil Society Organizations	2018-2023	1. Publication of the National Patient Blood Management Strategy in line with the Development of Blood Transfusion Management System Project in Turkey 2. Publication of Proper Clinical Use of Blood Guidelines 3. Provision of training for clinicians using blood and blood components and for other personnel involved in the blood transfusion chain 4. Establishment of software for the follow-up of a patient's transfusion history and indications of blood and blood component use
5. Delivering training activities to ensure more effective operation of hemovigilance systems	GD of Health Services	GD of Public Health Turkish Red Crescent	2018-2023	1. Preparation of a distance education program for health-care personnel assigned to the system
6. Developing training and supervision operations for effective management of blood services	GD of Health Services	GD of Public Health	2018-2023	1. Specification of the auditors and organization of the training sessions

HCC: Hepatocellular carcinoma. **GD:** General Directorate.

Table 5.7. Action Plan for Preventing the Transmission of Viral Hepatitis in Intravenous Drug Users

STRATEGY 7. PREVENTION OF VIRAL HEPATITIS TRANSMISSION IN INTRAVENOUS DRUG USERS				
AIM VII. To prevent the transmission of viral hepatitis among IV drug users				
OBJECTIVE VII. To reduce the number of viral hepatitis cases caused by IV drug use by 50%				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Raising awareness regarding viral hepatitis among staff working in centers for drug addiction treatment	GD of Health Services	GD of Public Hospitals	2018-2023	1. Percentage of staff trained in treatment centers
2. Training and educating applicants to centers for drug addiction treatment	GD of Health Services	GD of Public Hospitals	2018-2023	1. Percentage of addicted patients who have applied to the treatment centers and undergone training
3. Raising awareness regarding viral hepatitis among IV drug users	GD of Health Services	GD of Public Hospitals	2018-2023	1. Percentage of participants who have applied to the treatment centers and have a history of IV drug use
4. HBV and HCV screening of IV drug users who applied to the drug addiction treatment centers	GD of Health Services	GD of Public Hospitals GD of Health Information Systems	2018-2023	1. Percentage of patients examined among IV drug users applying to treatment centers 2. Percentage of HBV and HCV positivity among IV drug users examined
5. Ensuring vaccination of IV drug users against HBV	GD of Health Services	GD of Public Hospitals GD of Health Information Systems	2018-2023	1. Percentage of IV drug users who have been vaccinated against HBV
6. Referring patients with HBV or HCV for treatment	GD of Health Services	GD of Public Hospitals GD of Health Information Systems	2018-2023	1. Percentage of patients referred for treatment in drug addiction treatment centers

IV: Intravenous. **GD:** General Directorate. **HBV:** Hepatitis B Virus. **HCV:** Hepatitis C Virus.

Table 5.8. Action Plan to Prevent Health-Care Service-Related Hepatitis

STRATEGY 8. PREVENTION OF HEALTH SERVICES-RELATED HEPATITIS				
AIM VIII. To prevent health services-related hepatitis				
OBJECTIVE VIII. To increase health-care associated viral hepatitis prevention studies (safe invasive practices, training, immunization, medical waste control, efficient sterilization, and disinfection)				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
1. Raising awareness among health-care workers on safe invasive practices	GD of Health Services	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations	2018-2023	1. Number and percentage of personnel trained in safe invasive practices in health-care institutions
2. Raising awareness among health-care workers on medical services-related viral hepatitis	GD of Health Services	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations	2018-2023	1. Number and percentage of personnel working and trained in hospitals
3. Increasing vaccination rates among health-care workers	GD of Health Services	GD of Public Hospitals GD of Health Services	2018-2023	1. Percentage of vaccinated personnel in hospitals (including those vaccinated in previous years)
4. Enhancing safety and control in sterilization and disinfection services	GD of Health Services	GD of Public Hospitals GD of Health Services Universities	2018-2023	1. Number and percentage of personnel trained in sterilization and disinfection services

GD: General Directorate.

Table 5.8. Action Plan to Prevent Health-Care Service-Related Hepatitis

STRATEGY 8. PREVENTION OF HEALTH SERVICES-RELATED HEPATITIS				
AIM VIII. To prevent health services-related hepatitis				
OBJECTIVE VIII. To increase health-care associated viral hepatitis prevention studies (safe invasive practices, training, immunization, medical waste control, efficient sterilization, and disinfection)				
ACTIVITIES				
	Responsible Institution	**Partners**	**Duration**	**Monitoring**
5. Complying with and encouraging compliance with universal rules for medical waste disposal	GD of Health Services	GD of Public Hospitals GD of Health Services Ministry of Environment and Urban Planning	2018-2023	1. Number and percentage of personnel trained to comply with the universal rules for medical waste disposal
6. Preventing hepatitis transmission through enhancement of precautions adopted during invasive procedures	GD of Health Services	GD of Public Hospitals GD of Health Services Universities Other Civil Society Organizations	2018-2023	1. Number of unsafe invasive procedures encountered during health service delivery 2. Decrease in percentage of hepatitis cases associated with service provided by health-care personnel

GD: General Directorate.

6. EXECUTION

Turkish Ministry of Health is responsible for the execution of this plan.

The secretariat will be undertaken by the Turkish Ministry of Health's General Directorate of Public Health Department of Infectious Diseases and the Department of Preventable Diseases by Vaccination.

Implementation of the program's management and strategies will be conducted within the framework of the activities included in the action plans of the control program.

The relevant partners will be responsible for the implementation of the activities specified in the action plans, together with the relevant institutions and organizations. The appropriate individuals will be identified, and the coordination of the studies will be conducted in cooperation with the relevant units and partners within the Ministry, according to the criteria specified in the indicated plan.

Planning, execution, evaluation, and development of the activities mentioned in the action plans will be carried out in collaboration with the partners.

The secretariat will organize meetings to facilitate monitoring and evaluation of the action plans detailed in the control program.

7. REFERENCES

1. Global Hepatitis Report, 2017. World Health Organization http://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/ (Date of access: 10.03.2018)
2. Hepatitis A fact sheet. In: World Health Organization:media centre July 2016 update. http://www.who.int/mediacentre/factsheets/fs328/en/ (Date of access: 10 Mart 2017)
3. Tozun N, Ozdogan O, Cakaloglu Y, Idilman R, Karasu Z, Akarca U, et al. Seroprevalence of hepatitis B and C virus infections and risk factors in Turkey: a fieldwork TURHEP study. Clin Microbiol Infect 2015;21:1020-1026.
4. Toy M, Önder FO, Wörmann T, Bozdayi AM, Schalm SW, Borsboom GJ, et al. Age- and region-specific hepatitis B prevalence in Turkey estimated using generalized linear mixed models: a systematic review. BMC Infect Dis 2011;11:337.
5. Nakil Sayıları - TTDIS KARAR DESTEK SİSTEMİ. Organ, Doku Nakli ve Diyaliz Hizmetleri Daire Başkanlığı. https://organkds.saglik.gov.tr/KamuyaAcikRapor.aspx?q=ORGANNAKLI (Date of access: 11.03.2018)
6. World health statistics 2016: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2016. http://www.who.int/gho/publications/world_health_statistics/2016/en/ (Date of access: 10 Mart 2017).
7. Türkiye Viral Hepatitler Tanı ve Tedavi Kılavuzu 2017. http://www.vhsd.org/tr/page/turkiye-viral-hepatitliler-tani-ve-tedavi-kilavuzu-2-7.html. (Date of access 10.03.2018)
8. Romero Díaz-Maroto V, Sánchez Cuervo M, Rodríguez Sagrado MÁ, Bermejo Vicedo T. Adherence to entecavir for chronic hepatitis B and correlation with effectiveness. Farm Hosp 2015;39:378-381.
9. Guidelines for the prevention, care and treatment of persons with chronic hepatitis B infection. Geneva: World Health Organization; March 2015. http://apps.who.int/iris/bitstream/10665/154590/1/9789241549059_eng. pdf?ua=1&ua=1. (Date of access:10.03.2018).
10. Gower E, Estes C, Blach S, Razavi-Shearer K, Razavi H. Global epidemiology and genotype distribution of the hepatitis C virus infection. J Hepatol 2014;61(1 Suppl):45-57.
11. Razavi H, Waked I, Sarrazin C, Myers RP, Idilman R, Calinas F et al. The present and future disease burden of hepatitis C virus (HCV) infection with today's treatment paradigm. J Viral Hepat 2014;21 Suppl 1:34-59.
12. T.C.Sağlık Bakanlığı Sağlık Hizmetleri Genel Müdürlüğü Organ, Doku Nakli ve Diyaliz Hizmetleri Daire Başkanlığı 2016 yıl sonu verileri.
13. EASL Recommendations on Treatment of Hepatitis C 2016. European Association for the Study of the Liver. J Hepatol 2017;66:153-194.
14. The American Association for the Study of Liver Diseases and the Infectious Diseases Society of America. Present HCV Guidance: Recommendations for Testing, Managing, and Treating Hepatitis C. Last Updated: September 21, 2017. www.hcvguidelines.org (Date of access:10.03.2018)
15. Kaymakoğlu S, Köksal İ, Tabak F, Akarca US, Akbulut A, Akyüz F, et al. Guidelines Study Group VH. Recommendation for treatment of hepatitis C virus infection.Turk J Gastroenterol 2017;28(Suppl 2):94-100.

16. Backus LI, Belperio PS, Shahoumian TA, Mole LA. Impact of sustained virologic response with direct-acting antiviral treatment on mortality in patients with advanced liver disease. Hepatology 2017 Jul 27. doi: 10.1002/hep.29408.

17. Kim WR, Mannalithara A, Lee H, Osinusi AO, Schall R, Brainard DM. Survival Benefit of Direct- Acting Antiviral Therapy in Patients with Decompensated Cirrhosis. AASLD Annual Meeting 2017, Washington, DC, USA, October 20-24. http://www.natap.org/2017/AASLD/AASLD_157.htm (Date of access: 10.03.2018)

18. Global report on access to hepatitis C treatment: focus on overcoming barriers. http://www.who.int/hepatitis/publications/hep-c-access-report/en/ (Date of access: 18 Mart 2018)

19. Calvaruso V, Petta S, Craxì A.Is global elimination of HCV realistic? Liver Int 2018;38 Suppl 1:40-46.

20. Younossi ZM, Singer ME, Mir HM, Henry L, Hunt S. Impact of interferon free regimens on clinical and cost outcomes for chronic hepatitis C genotype 1 patients. J Hepatol 2014;60: 530-537.

21. Chhatwal J, Kanwal F, Roberts MS, Dun MA. Cost-effectiveness and budget impact of hepatitis C virus treatment with sofosbuvir and ledipasvir in the United States. Ann Intern Med 2015;162:397-406.

22. Eliminating the public health problem of hepatitis B and C in the United States: Phase one report. Committee on a National Strategy for the Elimination of Hepatitis B and C; Board on Population Health and Public Health Practice; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine; Buckley GJ, Strom BL, editors. Washington (DC): National Academies Press (US); 2016.

23. Chan DP, Sun HY, Wong HT, Lee SS, Hung CC. Sexually acquired hepatitis C virus infection: a review. Int J Infect Dis 2016;49:47–58.

24. Değertekin H, Yalçin K, Yakut M. The prevalence of hepatitis delta virus infection in acute and chronic liver diseases in Turkey: an analysis of clinical studies. Turk J Gastroenterol 2006;17:25-34.

25. Değertekin H, Yalçin K, Yakut M, Yurdaydin C. Seropositivity for delta hepatitis in patients with chronic hepatitis B and liver cirrhosis in Turkey: a meta-analysis. Liver Int 2008;28:494-8.

26. Aydın NN, Ergünay K, Karagül A, Pınar A, Us D. Investigation of the hepatitis E virus seroprevalence in cases admitted to Hacettepe University Medical Faculty Hospital. Mikrobiyol Bul. 2015;49:554-64.

27. Eker A, Tansel O, Kunduracilar H, Tokuç B, Yuluğkural Z, Yüksel P. Hepatitis E virus epidemiology in adult population in Edirne province, Turkey. Mikrobiyol Bul 2009;43:251-258.

28. Rein DB, Stevens GA, Theaker J, Wittenborn JS, Wiersma ST. The global burden of hepatitis E virus genotypes 1 and 2 in 2005. Hepatology 2012;55:988–997.

29. El Khoury AC, Wallace C, Klimack WK, Razavi H. Economic burden of hepatitis C-associated diseases: Europe, Asia Pacific, and the Americas. J Med Econ 2012;15:887-896.

30. De Martel C, Maucort-Boulch D, Plummer M, Franceschi S. World-wide relative contribution of hepatitis B and C viruses in hepatocellular carcinoma. Hepatology 2015;62:1190 – 1200.

31. Ekinci O, Baran B, Ormeci AC, Soyer OM, Gokturk S, Evirgen S, et al. Current state and clinical outcome in Turkish patients with hepatocellular carcinoma. World J Hepatol 2018;10:51-61.

32. Chen JD, Yang HI, Iloeje UH, You SL, Lu SN, Wang LY, et al. Carriers of inactive hepatitis B virus are still at risk for hepatocellular carcinoma and liver-related death. Gastroenterology 2010;138:1747-1754.

33. Papatheoroidis GV, Idilman R, Dalekos GN, Buti M, Chi H, van Boemmel F, et al. The risk of hepatocellular carcinoma decreases after the first 5 years of entecavir or tenofovir in Caucasians with chronic hepatitis B. Hepatology 2017;66:1444-1453.

34. European Center for Disease Prevention and Control (ECDC) Technical Report. hepatitis B and C in the EU neighborhood: prevalence, burden of disease and screening policies, September 2010. https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/TER_100914_Hep_B_C%20_EU_neighbourhood.pdf (Date of access: 19.03.2018)

TECHNICAL WORKING GROUP

Dr. Osman TOPAÇ
Head of the Department of Vaccine-Preventable Diseases

Dr. Ayla AYDIN
Head of Department of Communicable Diseases

Doç. Dr. M. Gökhan GÖZEL
Department of Communicable Diseases

Uzm. Dr. Fehminaz TEMEL
Department of Health Threats Early Warning and Response

Dr. Selmur TOPAL
Department of Health Threats Early Warning and Response

Dr. Handan UZ ERİNCİK
Department of Vaccine-Preventable Diseases

Dr. Ekin ÇUBUKÇU
Department of Communicable Diseases

COORDINATION BOARD

Prof. Dr. Emine ALP MEŞE
Turkish Ministry of Health, Deputy Minister

Dr. Hüseyin İLTER
Turkish Ministry of Health, General Director of Public Health

Dr. Osman TOPAÇ
Head of Department of Vaccine-Preventable Diseases

Dr. Ayla AYDIN
Head of Department of Communicable Diseases

Doç. Dr. M. Gökhan GÖZEL
Department of Communicable Diseases

Uzm. Dr. Fehminaz TEMEL
Department of Health Threats Early Warning and Response

Dr. Selmur TOPAL
Department of Health Threats Early Warning and Response

Dr. Handan UZ ERİNCİK
Department of Vaccine-Preventable Diseases

Dr. Ekin ÇUBUKÇU
Department of Communicable Diseases

SCIENTIFIC COMMITTEE (IN ALPHABETICAL ORDER)

Prof. Dr. Ulus S. AKARCA
Ege University, Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Esra G. AKINCI
Sağlık Bilimleri University, Ankara Numune Education and Research Hospital, Department of Infectious Diseases

Prof. Dr. Murat AKYILDIZ
Memorial Ataşehir Hospital, Department of Gastroenterology and Organ Transplantation Center

Prof. Dr. Nurcan BAYKAM
Hitit University, Faculty of Medicine, Clinic of Infectious Diseases and Microbiology

Prof. Dr. Fatih BEŞIŞIK
İstanbul University, İstanbul Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Hürrem BODUR
Sağlık Bilimleri University, Ankara Numune SUAM, Department of Infectious Diseases and Clinical Microbiology

Prof. Dr. Cemal BULUT
Sağlık Bilimleri University, Gülhane Faculty of Medicine, Department of Infectious Diseases and Clinical Microbiology

Prof. Dr. Yılmaz ÇAKALOĞLU
Memorial Şişli Hospital, Department of Gastroenterology and Organ Transplantation Center

Prof. Dr. Abdulkadir DÖKMECİ
Ankara University, School of Medicine, Department of Gastroenterology

Prof. Dr. Rahmet GÜNER
Ankara Yıldırım Beyazıt University, Faculty of Medicine, Atatürk Training and Research Hospital, Clinic of Infectious Diseases and Microbiology

Prof. Dr. Fulya GÜNŞAR
Ege University, Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Sadettin HÜLAGÜ
Kocaeli University, Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Ramazan İDİLMAN
Ankara University, School of Medicine, Department of Gastroenterology

Prof. Dr. Zeki KARASU
Ege University, Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Sabahattin KAYMAKOĞLU
İstanbul University, İstanbul Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Mehmet KORUK
Gaziantep Medikal Park Hospital, Gastroenterology Clinic

Prof. Dr. İftihar KÖKSAL
Karadeniz Technical University, Faculty of Medicine, Clinic of Infectious Diseases and Microbiology

Prof. Dr. Osman C ÖZDOĞAN
Turkish Ministry of Health, Marmara University, Pendik Training and Research Hospital Gastroenterology Clinic

Doç. Dr. Hale GÖKCAN SÜMER
Turkish Ministry of Health, Türkiye Yüksek İhtisas Hospital, Gastroenterology Clinic

Doç. Dr. Ebubekir ŞENATEŞ
İstanbul Medeniyet University, Göztepe Training and Research Hospital Gastroenterology Clinic

Prof. Dr. Fehmi TABAK
İstanbul University-Cerrahpaşa Faculty of Medicine, Clinic of Infectious Diseases and Microbiology

Prof. Dr. Selma TOSUN
Sağlık Bilimleri University, İzmir Bozyaka Training and Research Hospital, Clinic of Infectious Diseases and Microbiology

Prof. Dr. Nurdan TÖZÜN
Acıbadem Mehmet Ali Aydınlar University, Faculty of Medicine, Department of Gastroenterology

Prof. Dr. Tansu YAMAZHAN
Ege University, Faculty of Medicine, Department of Infectious Diseases and Clinical Microbiology

8. PARTNERS

Turkish Ministry of Health, General Directorate of Public Hospitals

Turkish Ministry of Health, General Directorate of Health Services

Turkish Ministry of Health, General Directorate of Health Information Systems

Turkish Ministry of Health, General Directorate of Emergency Health Services

Turkish Ministry of Health, General Directorate of Health Improvement

Turkish Ministry of Justice

Turkish Ministry of National Defense

Turkish Ministry of Education

Turkish Ministry of Environment and Urban Planning

Turkish Ministry of Family, Labor, and Social Services

Turkish Red Crescent

Universities

Provincial Health Directorates

Infection Control Committees

Social Security Institution

Higher Education Council

General Directorate of Migration Management

Turkish Association for the Study of Liver

Viral Hepatitis Society

Other Civil Society Organizations

REPUBLIC OF TURKEY
MINISTRY OF HEALTH

REPUBLIC OF TURKEY
MINISTRY OF HEALTH

ANKARA-2019