Prevention & Control of Viral Hepatitis Infection:

Framework for Global Action

World Health Organization

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I. Introduction

What is the problem?

Viral hepatitis is a global public health problem affecting millions of people every year, causing disability and death.

Overall:

- Around 500 000 000 people are chronically infected with hepatitis B virus (HBV) or hepatitis C virus (HCV).
- Approximately 1 000 000 people die each year (~2.7% of all deaths) from causes related to viral hepatitis, most commonly liver disease, including liver cancer.[1]
- An estimated 57% of cases of liver cirrhosis and 78% of cases of primary liver cancer result from HBV or HCV infection.[2]

Why should we be concerned?

Millions of people are living with viral hepatitis and millions more are at risk. Most people who were infected long ago with HBV or HCV are unaware of their chronic infection. They are at high risk of developing severe chronic liver disease and can unknowingly transmit the infection to other people.

Viral hepatitis places a heavy burden on the health care system because of the costs of treatment of liver failure and chronic liver disease. In many countries, viral hepatitis is the leading cause of liver transplants. Such end-stage treatments are expensive, easily reaching up to hundreds of thousands of dollars per person.[3] Chronic viral hepatitis also results in loss of productivity.[4]

Some groups are at more risk of contracting viral hepatitis than others. In communities where food and sanitation services are not optimal, hepatitis A and E tend to be more common. New hepatitis B and C infections are seen more often in recipients of organs, blood, and tissue, along with persons working or receiving care in health settings, and in vulnerable groups.

In recent decades, viral hepatitis has not received the attention it deserves from the global community. Although the burden of disease is very high, the problem has not been addressed in a serious way for many reasons, including the relatively recent discovery of the causative viruses, the mostly silent or benign nature of the disease in its early stages, and the insidious way in which it causes chronic liver disease. Decades-long delay between infection and the expression of chronic liver disease or liver cancer made it difficult to link these diseases to earlier HBV or HCV infections. All these factors have resulted in "the silent epidemic" we are experiencing today.

We are experiencing a silent epidemic today.

Is there a solution?

Affordable measures, such as vaccination, safe blood supply, safe injections, and safe food, can reduce the transmission of viral

hepatitis infections. These are detailed below. Most of these measures not only reduce the transmission of viral hepatitis but also have spill over effects on the prevention of other infectious diseases. Further, current therapies for hepatitis B and C give health care providers effective tools to combat the disease. For the first time in history, hepatitis C is curable. New therapies are also being developed for hepatitis B and C, and the future is more promising than ever.

What is WHO's response?

In 2010 the World Health Assembly adopted resolution WHA63.18, which calls for a comprehensive approach to the prevention and control of viral hepatitis . In passing this resolution, Member States recognized the tremendous burden of viral hepatitis.

Resolution WHA 63.18 stipulates that WHO work closely with Member States in the following areas:

- To develop the necessary guidelines, strategies, time-bound goals and tools for the surveillance, prevention and control of viral hepatitis
- To provide the necessary support to the development of scientific research related to the prevention, diagnosis and treatment of viral hepatitis
- To improve the assessment of global and regional economic impacts and estimates of the burden of viral hepatitis
- To mobilize support to strengthen surveillance systems, prevention and control programmes, diagnostic and laboratory capacity, and management of viral hepatitis in developing countries in an equitable, efficient, and suitable manner
- To strengthen the WHO Safe Injection Global Network

The resolution also encourages all interested parties, from the United Nations and Member States to civil society, patient groups and the private sector, to collaborate in supporting this endeavour.

In line with WHA63.18, the WHO Secretariat established a Global Hepatitis Programme within its Department of Pandemic and Epidemic Diseases, with focal points in the six Regional Offices, to implement the resolution and attain the goals outlined in this framework.

For the first time in history, hepatitis C is curable.

Since 2011, World Hepatitis Day has been celebrated annually on 28 July. World Hepatitis Day provides a unique opportunity for communities all around the world to join together on one day to focus attention on the global health threat of hepatitis and promote actions to confront it.

This framework provides a global vision for the prevention and control of viral hepatitis and an overview of the global burden, current efforts and remaining challenges in the global response to viral hepatitis. It also outlines four axes for action with suggested approaches for Member States to adopt or adapt as they see fit.

www.worldhepatitisday.info

This is **hepatitis...**

World Health Organization

What is viral hepatitis?

Viral hepatitis is an inflammation of the liver caused by one of the five hepatitis viruses, referred to as types A, B, C, D and E . While all of these viruses cause liver disease, they vary significantly in terms of epidemiology, natural history, prevention, diagnosis and treatment.

Hepatitis A virus (HAV) is usually transmitted by the faecal-oral route, either through person-to-person contact or ingestion of contaminated food or water. Certain sex practices can also spread HAV. Infections are in many cases mild, with most people making a full recovery and remaining immune from further HAV infections. However, HAV infections can also be severe and life threatening. Most people in areas of the world with poor sanitation have been infected with this virus. Safe and effective vaccines are available to prevent HAV infection.

Hepatitis B virus (HBV) is transmitted through exposure to infectious blood, semen, and other body fluids. HBV can be transmitted from infected mothers to infants at the time of birth, or from family members to infants in early childhood. Transmission may also occur through unsafe sexual intercourse, transfusions of HBV-infected blood and blood products, contaminated injections during medical procedures, and sharing of needles and syringes among injecting drug users. HBV also poses a risk to healthcare workers who sustain accidental needle-stick injuries while caring for HBV-infected people. A safe and effective vaccine is available to prevent HBV infection.

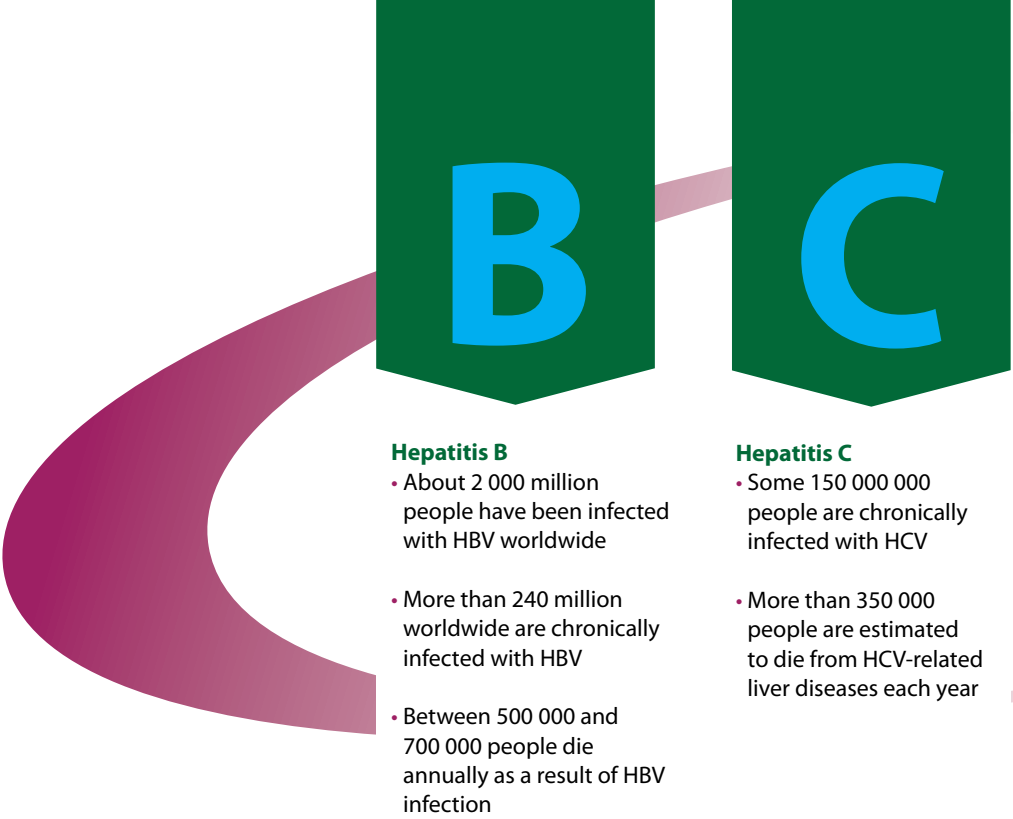
Hepatitis C virus (HCV) is mostly transmitted through exposure to infectious blood. This may happen through transfusions of HCV-infected blood and blood products, contaminated injections during medical procedures, and sharing of needles and syringes among injecting drug users. Sexual or interfamilial transmission is also possible, but is much less common. There is no vaccine against HCV. Both HBV and HCV can cause cancer to humans.

Antiviral agents against HBV and HCV exist. Treatment of HBV infection has been shown to reduce the risk of developing liver cancer and death.

HCV is generally considered to be a curable disease but for many people this is not the reality. Access to treatment remains a constraint in many parts of the world.

Hepatitis D virus (HDV) infections occur exclusively in persons infected with HBV. The dual infection of HDV and HBV can result in more serious disease and worse outcomes. The hepatitis B vaccine provides protection from HDV infection.

Hepatitis E virus (HEV), like HAV, is transmitted through consumption of contaminated water or food. HEV is a common cause of hepatitis outbreaks in the developing world and is increasingly recognized as an important cause of disease in developed countries. HEV infection is associated with increased morbidity and mortality in pregnant women and newborns. A safe and effective vaccine against HEV was licenced in January 2012 but is not yet widely available.



Hepatitis B

- About 2 000 million people have been infected with HBV worldwide
- More than 240 million worldwide are chronically infected with HBV
- Between 500 000 and 700 000 people die annually as a result of HBV infection

Hepatitis C

- Some 150 000 000 people are chronically infected with HCV
- More than 350 000 people are estimated to die from HCV-related liver diseases each year

What is the global disease burden?

The group of viruses (hepatitis A, B, C, D and E) that cause acute or chronic infection and inflammation of the liver give rise to a major global public health problem.

Hepatitis A

It was estimated that 119 million people were infected with hepatitis A virus (HAV) in 2005, with 31 million symptomatic illnesses and 34000 deaths.[5]

Paradoxically, as water and sanitation systems improve in developing countries, infections occur later in life, when the risk for severe disease from hepatitis A is greatest. This shifting epidemiology is responsible for increased numbers of symptomatic cases in some countries and the emergence of community-wide outbreaks of hepatitis A.

Hepatitis B

HBV infection has a worldwide distribution. It is estimated that more than 2 billion people have been infected. Of these, approximately 240 million are chronically infected and at risk of serious illness and death from cirrhosis and hepatocellular carcinoma (HCC), diseases that are estimated to cause 500 000–700 000 deaths each year worldwide.[6]

Hepatitis A

- It is estimated that about 1 400 000 new hepatitis A virus (HAV) infections occur globally each year

Hepatitis E

- Every year there are 20 million hepatitis E infections, over three million acute cases of hepatitis E, and 70 000 hepatitis E-related deaths

It's closer than you think! Hepatitis doesn't just affect 1 in 12 people worldwide, it affects those close to them too!

Hepatitis C

About 150 million people are chronically infected with HCV. More than 350 000 people are estimated to die from HCV-related liver diseases each year.

Exposure to blood through injections with non-sterile equipment or transfusion of infected blood products is a common and preventable cause of HBV and HCV infections.

HBV/HIV and HCV/HIV coinfections are an increasing problem in countries with HIV epidemics and among injecting drug users. For co-infected persons being treated with HIV antiretroviral medicines, underlying viral hepatitis is becoming a major cause of death.

Hepatitis D

Both super-infection by, and coinfection with, HDV in patients also infected with HBV results in worse outcomes than infection with HBV alone. There is a higher rate of liver failure in acute infections and a greater likelihood of developing liver cancer in chronic infections.

Hepatitis E

HEV caused an estimated 3.4 million symptomatic illnesses, 70000 deaths and 3000 stillbirths in 2005.

Hepatitis E virus infection occurs both sporadically and in large epidemics, causing significant morbidity and mortality, especially deaths in pregnant women. It is estimated that one third of the world's population has been infected with hepatitis E virus. However, the true prevalence of hepatitis E is unknown.[7]

Foodborne and waterborne transmission of hepatitis A and E viruses is common; indeed, hepatitis A virus is one of the most frequent causes of foodborne infections. Outbreaks of hepatitis A and E affecting more than 100 000 people and causing significant morbidity, mortality and disruption of trade and tourism have been documented. Foodborne contamination may be the result of infected food handlers unknowingly contaminating food. Hepatitis A and E viruses persist in the environment and can resist food-production processes routinely used to inactivate or control bacterial pathogens.

What is the regional disease burden?

African Region

All countries in the African Region consider viral hepatitis an urgent public health issue. The burden of viral hepatitis, though not accurately known, is believed to be one of the highest in the world . Hepatitis A, B, C and E are the types mostly found in the Region . The prevalence of HBV is estimated at 8% in West Africa and 5-7% in Central, Eastern and Southern Africa . The prevalence of HCV is even higher in some areas, reaching levels of up to 10%.

Region of the Americas

Most countries in Latin America and the Caribbean (LAC) show intermediate endemicity for HAV; more than 50% of the population has acquired HAV immunity by the age of 15.[3] However, prevalence varies from region to region. For instance, anti-HAV seroprevalence between the ages of 15 and 19 is at 57% and 96%, respectively, in the Caribbean and Andean regions.[8]

Recent data indicate that from 1990 to 2005 the prevalence of HBV infection was reduced on average below 2% in Central and Tropical Latin American regions. while it remained between 2% and 4% in the Caribbean, Andean and Southern Latin American regions.[9]

In LAC countries between 7 and 9 million adults are estimated to be anti-HCV positive,[10] meaning that they have been exposed to HCV and could contract chronic infection.

With respect to HDV, high prevalences of coinfection among HBV cases have been observed in the Amazonian region.[11] For example, a study from Colombia[12] showed that among HBV-positive habitants, 5.2% were HDV positive and all except one were from the Amazonian region. Several hypotheses suggest that HDV genotype III may be related to this.

Low prevalence and outbreaks of HEV have been reported in some LAC countries.[11] Although higher prevalence has been reported elsewhere, little is known about the epidemiology of this infection in the region. For instance, studies in the Brazilian population show prevalence rates of

around 3% in adults, while in Bolivia, the rates ranged from 1.7 to 16.2%.[13]

Eastern Mediterranean Region

It is estimated that approximately 4.3 million people are infected with HBV and 800 000 people are infected with HCV annually. The HCV prevalence is estimated to be 1-4.6%, with levels higher than 15% in Egypt. Overall, an estimated 17 million people in the region suffer from chronic HCV infection.[14]

The risk of infection with HBV is high in five countries (Afghanistan, Pakistan, Yemen, Sudan and Somalia), accounting for more than 55% of the total population of the region, and moderate in the remaining 17 countries.[7]

The prevalence of HEV infection is high in Sudan, South Sudan, Pakistan and Somalia. However, the burden is unknown.[7]

European Region

In Europe the threat posed by chronic viral hepatitis is becoming more apparent. Within this region, about 14 million people are chronically infected with HBV, and nine million people are chronically infected with HCV , compared with 1.5 million infected by HIV. Thirty-six thousand people die each year from HBV-related causes and 86 000 because of HCV.[15]

The prevalence of HCV in the general population varies from 0.4% in Sweden, Germany and the Netherlands to more than 2–3% in some Mediterranean countries.[16] The HCV incidence rate in 2007 varied between 36.7 cases per 100 000 (Ireland) to 0.05 (Greece).[17]

The seroprevalence and incidence of HAV are known to vary geographically. The overall incidence of hepatitis A has decreased over the last 10 years from 15.1 per 100 000 population in 1996 to 3.9 per 100 000 in 2006.[18] Although the total number of cases is decreasing, HAV infection is still an important public health threat in the region, with a potential for outbreaks, as recently experienced in Czech Republic, Latvia and Slovakia in 2008.[19]

HEV is responsible for fewer than 5% of cases of acute hepatitis in Western Europe, and in most studies antibodies against HEV have been found in a small proportion (0% to 10%) of healthy persons; for other parts of Europe this ratio is higher, such as the 27.8% rate in Czech Republic.

South-East Asia Region

It is estimated that in the next 10 years, more than 5 million people in the countries of the WHO South-East Asia Region will die from the consequences of viral hepatitis.

There are an estimated 100 million people living with chronic HBV infection and 30 million people with chronic HCV infection in the region. Chronic viral hepatitis infections are 30 times more frequent than HIV in this region. Because of the asymptomatic nature of chronic HBV and hepatitis C HCV, most people infected with these are not aware of their status until they have symptoms of cirrhosis or liver cancer many years later. About 65% of those with HBV and 75% of those with HCV do not know they are infected.[15]

HAV and HEV are serious health problems. Approximately 12 million cases of hepatitis E infections occur annually in the region, which accounts for more than half the global burden.

Western Pacific Region

Although this region contains only 28% of the global population, almost half the estimated 350 million people with chronic HBV infections worldwide live here.[20] With the exception of Australia, Japan and New Zealand, where the chronic HBV infection rate is less than 2%, countries in the region have an estimated rate of 8% or more.

There are an estimated 160 million people with chronic HBV infections, and more than 360 000 HBV-related deaths occur annually.[15,21,22] The region accounts for almost 60% of global liver cancer cases. Moreover, liver cancer is the second most common cause of cancer mortality.[23,24]

For HCV infection, while most countries have prevalence rates from 1% to 2%, some countries have relatively high prevalence rates, including Taiwan (4.4%) and Vietnam (2-2.9%).[25] Although strategies have been implemented to reduce risk factors for HCV infection, blood transfusion, unsafe injections and injecting drug use are the major routes of transmissions in the region.

Different areas in this region have reported low, moderate or high endemicity for HAV infection, but over the last 20 years some of these patterns have changed.[26] The high-income Western Pacific countries and Australasia have consistently had very low HAV infection prevalence rates. East Asia appears to have decreased from an intermediate to a low seroprevalence rate in recent decades. With some parts of China still having areas of high endemicity for HAV, serum IgG- positive prevalence among the general population has been reported as high as 81%.[27]

The overall seroprevalence of anti-HEV rarely exceeds 25% in a healthy population, even in areas of high endemicity.[28]

II. Prevention & control: a tailored approach

Given the differences in the geographic distribution, transmission, diagnosis and treatment of hepatitis A, B, C, D and E infections, tailored prevention and control strategies are required. A comprehensive approach to the prevention of viral hepatitis includes a number of strategies.

Primary Prevention

- Advocacy and raising awareness of all types of viral hepatitis infections help reduce transmission in the community.
- Safe and effective vaccines are widely available for the prevention of HAV and HBV infections and an HEV vaccine has recently been licenced in China.
- Implementation of blood safety strategies, including blood supplies based on voluntary non-remunerated blood donations, effective public education on blood donation, donor selection, and quality-assured screening of all donated blood and blood components used for transfusion can prevent transmission of HBV and HCV.
- Infection control precautions in health care and community settings can prevent transmission of viral hepatitis as well as many other diseases.
- Safe injection practices can protect against HBV and HCV transmission.
- Safer sex practices, including minimizing the number of partners and using barrier protective measures (condoms), protect against HBV and possibly against HCV transmission.
- Harm reduction practices for injecting drug users prevent HAV, HBV and HCV transmission.
- Occupational safety measures prevent transmission of viral hepatitis to health care workers.
- Safe food and water provide protection against HAV and HEV infections.

Secondary and Tertiary Prevention

Early diagnosis provides the best opportunity for effective medical support and prevention of further spread. It also allows the infected persons to take steps to prevent transmission of the disease to others. Early diagnosis of those with chronic infection also allows people to take precautions to protect the liver from additional harm, specifically by abstaining from alcohol and tobacco consumption and avoiding certain drugs that are known to be toxic to the liver.

Both the introduction of confirmatory testing and the notification and counselling of blood donors who have reactive results detected during screening of donated blood provide unique opportunities for early diagnosis and medical support to asymptomatic individuals who come to donate blood.

Antiviral agents against HBV and HCV exist. However, drugs active against HBV or HCV are not widely accessible. Currently, three antiretrovirals (TDF, 3TC, FTC) are effective for treatment of both HIV and HBV, so co-infected patients can take fewer drugs to treat the two diseases.

Although HCV can be treated, access to treatment remains an issue in many countries. Therapeutic advances and intense research have led to the development of many new oral antiviral drugs for HCV infection. A number of HCV-specific oral drugs are in the late stage of development and some have been recently registered.

Much needs to be done to ensure access to and availability of reliable and low-cost diagnostics and safe and simple treatment regimens, especially in resource-constrained areas of the world.

III. Current global achievements

- As of 2009, 91% of WHO Member States included the HBV vaccine in their infant immunization programs and more than 70% of infants received 3 doses of this vaccine, which provides them with lifelong protection from HBV.
- 179 countries have introduced the HBV vaccine. This intervention has prevented approximately 1 307 000 deaths.
- WHO's advice, guidance and technical support are assisting countries in ensuring the safety, quality and availability of blood and blood products to meet the needs of all patients requiring blood transfusion.
- The WHO Prequalification of Diagnostics programme assesses the quality and performance of commercially available diagnostics for use in blood and blood product screening, surveillance and diagnosis.
- WHO has developed tools to assess injection practices and assist countries to develop injection safety strategies. By 2009, two thirds of the 96 low and middle income countries that underwent this process had implemented safe injection programs.
- WHO has defined core components for infection prevention and control programmes, providing a systematic approach to prevention of hepatitis and other communicable diseases in healthcare settings.
- Persons with active chronic HBV and HIV infections now can benefit from new treatment with antiretroviral drugs, which are recommended in the WHO guidelines.
- New global burden of disease studies by WHO have demonstrated the high burden of disease from HAV and HEV globally.

Hepatitis B infant immunization: A well accepted strategy that works!

IV. Remaining challenges

Despite these global successes, more needs to be done to prevent and control viral hepatitis.

Awareness, partnership, resources

- Lack of adequate knowledge and awareness among the general population as well as health professionals is a major challenge.

Data for policy and action

- Most countries lack adequate surveillance systems to enable them to take evidence-based policy decisions.

Prevention of transmission

- In order to prevent maternal-child transmission, WHO is recommending HBV vaccination at birth. Less than half of Member States have a policy to provide HBV vaccine at birth and only 27% of newborns globally received this vaccine.

- HBV vaccine for infants was introduced nationwide in 179 countries (including parts of India and the Sudan) by the end of 2010. Global HBV vaccine coverage is estimated at 75% and is currently below the 90% global target.[29]

- In 2000 contaminated injections caused an estimated 21 million HBV infections, two million HCV infections and 260 000 HIV infections, accounting for 32%, 40% and 5% of new infections, respectively. Injection overuse and unsafe practices account for a substantial burden of death and disability worldwide.[30]

- Single use and needle-stick-injury-prevention syringes are relatively expensive and not accessible in resource-constrained settings where most unsafe practices are occurring.

- Implementation of Standard Precautions is still a challenge in many health-care facilities, dramatically increasing the risk of hepatitis transmission associated with health care.

- Medical waste is often not properly treated.

- In thirty-nine countries donated blood is not routinely screened for transfusion-transmissible infections, including HIV, HBV, HCV and syphilis. Irregular supply of test kits and the high costs of HCV screening tests are among the most commonly reported barriers to screening of donated blood.[31]

- In low-income countries where data are available, only 53% of donated blood samples were screened in a quality-assured manner in 2008.[15]

- In forty countries there is heavy dependence on a system of family/replacement and paid donors for blood, which increases the risk of infected persons donating blood.[15]

- Injecting drug users are at increased risk of HCV and HBV infections largely because of needle and syringe sharing practices. Worldwide, about 60-80% of injecting drug users are positive for HCV (about 10 million people) and 5-10% positive for HBV. About 6.4 million IDUs are anti-HBc positive and 1.2 million HBsAg positive.[32]

- Currently, about 37% of the world's population does not have access to improved sanitation, and 11% do not have immediate access to clean drinking-water sources.[33] That means that unsafe water and sanitation are the norm for millions of people.

Screening, care and treatment

- Among health professionals an additional challenge is the need to strengthen competencies for diagnosis, treatment, care and follow-up of people with viral hepatitis.

- Poor quality diagnostics for viral hepatitis still enter markets in resource-limited settings because of substandard or non-existent regulatory controls.

- Millions of chronically infected persons are unaware of their situation and its consequences, and they risk transmitting the disease to their families and partners. These people do not have timely access to testing, care and effective treatment services to delay disease progression and prevent morbidity, mortality or disability.

- Treatment for chronic viral hepatitis is not accessible for most people in resource-constrained settings.

- Most HIV-positive persons have not been tested for viral hepatitis and therefore their treatments have not been optimized for possible coinfections.

V. WHO vision, goals and framework for global action

Vision

A world where viral hepatitis transmission is stopped and all have access to safe and effective care and treatment.

Goals

Within a health systems framework and using a public health approach, the goal of the WHO viral hepatitis strategy is:

- to reduce transmission of the agents that cause viral hepatitis
- to reduce morbidity and mortality due to viral hepatitis and improve the care of patients with viral hepatitis
- to reduce the socio-economic impact of viral hepatitis at individual, community and population levels.

To accomplish this mandate, WHO will take a health systems approach, including scaling up successful interventions and developing new approaches while mobilizing much needed resources . The Secretariat's work will follow the framework for action to address the remaining challenges in hepatitis prevention and control. This comprehensive framework proposes four axes for regions and countries to develop effective strategies and plans according to their specific hepatitis burden and challenges.

Axis 1. Raising awareness, promoting partnerships and mobilizing resources

Activities focus on increasing awareness among policy-makers, health professionals, and the public about viral hepatitis and strengthening preventive and control measures while removing discrimination against those who are infected.

In 2011 WHO marked 28 July as World Hepatitis Day. Using the theme, "This is Hepatitis…Know it. Confront it. Hepatitis affects everyone, everywhere," WHO supported activities through collaboration with civil society . Campaign materials in multiple languages included technical fact sheets, web notifications, news updates, press releases, a video statement by the Director-General, campaign posters, social media and a variety of audio-visual materials. Mass media were widely engaged, resulting in increased visibility of both the problems caused by viral hepatitis as well as the solutions available to confront these diseases.

Axis 2. Evidence-based policy and data for action

Accurate data enable policy-makers and decision- makers at all levels to understand the burden of disease caused by viral hepatitis. Accordingly, WHO is updating global prevalence and burden estimates for viral hepatitis. Efforts are being made to communicate results and develop tools to enable governments to produce evidence-based and cost-effective policies and plans. Guidelines and standards for infection and disease surveillance are being finalized to assist countries to prioritize resources and to tailor different interventions, from immunization to antiviral therapy, from screening the blood supply to ensuring safe health-care environments and practices. Guidance on serological surveys is also being issued as a way of monitoring trends in viral hepatitis and to evaluate the impact of prevention efforts.

Axis 3. Prevention of transmission

Successful prevention efforts are being adapted to growing populations, changing epidemiology, and new economic constraints . WHO is re-examining immunization policies such as schedules and dosages, and the protection of high-risk groups, including newborns and health-care workers, especially against HBV. WHO is also looking at expanded roles for existing HAV vaccines and new HEV vaccines, as well as innovative approaches for the future. Just as the advent of the AIDS epidemic in the 1980s led to campaigns that successfully changed many behaviours, continued health promotion must focus on behaviours that put people at risk of infection but can be altered. Safer sex, safe and rational use of injections and safe blood transfusion continue to be key messages for the prevention of viral hepatitis . Emphasis should also be placed on ensuring safe food and water for countries and on proper disposal of sanitary waste.

Axis 4. Screening, care and treatment

Developments in therapeutic agents for HBV and HCV have been rapid over the past decade, such that HCV can often be cured and chronic HBV can be controlled for the long term. Guidelines for screening, for increasing access to care, for treatment of patients with chronic HBV and HCV infection, especially those in resource-constrained settings and for managing drug resistance, will be of utmost importance. WHO will provide guidance for screening, care and treatment of HBV and HCV infections, including provision of appropriate pre- and post-test counselling, as part of a framework for care and treatment and support to countries to make treatments more accessible and affordable.

VI. Conclusion

WHO has established the Global Hepatitis Programme in its Headquarters as a distinct team, with focal points in the Regional Offices, to achieve the objectives outlined in the World Health Assembly Resolution WHA63.18. This team will coordinate work with partners and Member States to develop tools and products relevant to each axis . To make prevention, care and treatment available to those who need it will require an immense effort on the part of all stakeholders: they will need to increase awareness, mobilize resources and apply lessons learned from other health areas. The implementation of this framework for action, including its translation into national strategic plans by all those involved, will contribute to major and sustained improvements in health.

Bibliography

[1] WHO Executive Board (2009) Viral hepatitis. Report by the Secretariat. EB126/15, 12 November 2009: *http://apps.who.int/gb/ebwha/pdf_files/EB126/B126_15-en.pdf*. Last accessed 25 April 2012.

[2] Perz JF et al. The contributions of hepatitis B virus and hepatitis C virus infections to cirrhosis and primary liver cancer worldwide. Journal of Hepatology, 2006,45: 529–538.

[3] El Khourya AC, Wallaceb C, et al. Economic burden of hepatitis C-associated diseases: Europe, Asia Pacific, and the Americas. Journal of Medical Economics. Posted online on March 30, 2012. (doi:10.3 111/13696998.2012.681332)

[4] Su J, Brook RA, Kleinman NL, Corey-Lisle P. The impact of hepatitis C infection on work absence, productivity, and healthcare benefits costs. Hepatology 2010;52(2):436–42.

[5] Jacobsen KH, Wiersma ST. Hepatitis A virus seroprevalence by age and world region, 1990 and 2005 . Vaccine, 2010, 28: 6653–6657.

[6] World Health Organization. Hepatitis B vaccines. Weekly Epidemiological Record, 2004.79:255-263.

[7] Rein DB et al. The global burden of hepatitis E virus genotypes 1 and 2 in 2005. Hepatology, April 2012, Volume 55, Issue 4: 988–997.

[8] Jacobsen KH, Wiersma ST. Hepatitis A virus seroprevalence by age and world region, 1990 and 2005, 2010, Vaccine 28: 6653-6657.

[9] Ott JJ et al. Global epidemiology of hepatitis B virus infection: new estimates of age-specific HBsAg seroprevalence and endemicity. Vaccine 30,2012:2212-2219.

[10] Kershenobich D, et al.. Trends and projections of hepatitis C virus epidemiology in Latin America. Liver Int, 2011, 31 Suppl 2:18-29.

[11] Pascarella S, Negro F. Hepatitis D virus: an update. Liver Int 31: 7-21., 2011

[12] Alvarado-Mora MV et al. Hepatitis B (HBV), hepatitis C (HCV) and hepatitis delta (HDV) viruses in the Colombian population - how is the epidemiological situation? PLoS One 6, 2011:e18888.

[13] Aggarwal R. The global prevalenceof hepatitis E virus infection and susceptibility: a systematic review. Geneva: World Health Organization, 2010.

[14] Eastern Mediterranean Regional Office of WHO. The growing threats of Hepatitis- B and Hepatitis-C in the Eastern Mediterranean Region: A call for action. Document no: EM/RC/56/3. Presented in the Fifty-sixth session of the WHO Regional Committee for the Eastern Mediterranean. Fez, Morocco, 5-8 October, 2009. Available at *http://www.emro.who.int/rc56/media/pdf/rc56_report.pdf*

[15] Emiroglu N. WHO data presented at Hepatitis B and C Summit Conference, October 2010.

[16] Payne L. Hepatitis A In The European Union: Responding To Challenges Related To New Epidemiological Patterns. Eurosurveillance Vol 14 , Issue 3.· 22 January 2009.

[17] IOM (Institute of Medicine). Hepatitis and Liver Cancer: A National Strategy for the Prevention and Control of Hepatitis B and C. Washington, DC, The National Academies Press, 2010.

[18] European Centre for Disease Prevention and Control: Annual Epidemiological Report on Communicable Diseases in Europe 2008. Stockholm, European Centre for Disease Prevention and Control, 2008.

[19] Payne, L. Hepatitis A In The European Union: Responding To Challenges Related To New Epidemiological Patterns. Eurosurveillance Vol 14 , Issue 3.· 22 January 2009.

[20] Clements CJ et al. Progress in the control of hepatitis B infection in the Western Pacific Region. Vaccine 2006, 24:1975-82.

[21] Goldstein ST et al. A mathematical model to estimate global hepatitis B disease burden and vaccination impact. Int J Epidemiol 2005, 34:1329-39.

[22] Nelson CB. Global and regional estimates of HBV-related disease burden. World Health Organization Regional Office for the Western Pacific's working group meeting on viral hepatitis B, Tokyo, Japan, 26-28 June 2002 (RS/2002/GE/05).

[23] Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. CA Cancer J Clin 2005, 55: 74-108.

[24] Parkin DM. The global health burden of infection-associated cancers in the year 2002. Int J Cancer 2006, 118:3030-44.

[25] Sievert W. A systematic review of hepatitis C virus epidemiology in Asia, Australia and Egypt. Liver International ,2011, 31:61-80.

[26] Barzaga NG. Hepatitis A shifting epidemiology in South-East Asia and China. Vaccine, 2000, 18:61-64.

[27] Xiao N, Shi S, Zhuang H. Epidemiology and vaccination strategy of hepatitis A in China. Public Health Capital, 2007, 1:4.

[28] Worm HC. Hepatitis E: an overview. Microbes and Infection,2002, 4: 657–666.

[29] WHO Global Immunization Data March 2012.

[30] Hauri AM, Armstrong GL, Hutin YJF. The global burden of disease attributable to contaminated injections given in health care settings. International Journal of STD & AIDS, 2004 15:7–16.

[31] WHO. Key global facts and figures in 2011,Fact Sheet no 279, June 2011.

[32] Nelson PK, Mathers BM et al. Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. Lancet., 2011 Aug 13,378(9791):571-83. Epub 2011 Jul 27.

[33] WHO, Global analysis and assessment of sanitation and drinking-water (GLAAS): The challenge of extending and sustaining services. 2012 ISBN: 9789241503365. *http://whqlibdoc.who.int/publications/2012/9789241503365_eng.pdf* Last accessed on 3 May 2012.

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