

Viral hepatitis

Report by the Secretariat

THE DISEASES AND BURDEN

1. The group of viruses (hepatitis A, B, C, D and E) that cause acute and/or chronic infection and inflammation of the liver gives rise to a major public health problem globally. Hepatitis B and C viruses are major causes of severe illness and death. The global burden of disease due to acute hepatitis B and C and to cancer and cirrhosis of the liver is high (about 2.7% of all deaths) and is forecast to become a higher ranked cause of death over the next two decades. An estimated 57% of cases of liver cirrhosis and 78% of cases of primary liver cancer result from hepatitis B or C virus infection. About 2000 million people have been infected with hepatitis B virus worldwide, of whom more than 350 million are chronically infected, and between 500 000 and 700 000 people die annually as a result of hepatitis B virus infection. Some 130–170 million people are chronically infected with hepatitis C virus, and more than 350 000 people are estimated to die from hepatitis C-related liver diseases each year.
2. Because hepatitis A, B, C, D and E viruses differ in their global distribution and routes of transmission, prevention strategies need to be tailored. Hepatitis B virus infection early in life is associated with the highest risk of chronic infection, and people with chronic infection risk progression to cirrhosis of the liver and primary liver cancer. About 90% of infants infected with hepatitis B virus around the time of birth, 30% of children infected in early childhood and 6% of those infected after five years of age will develop chronic hepatitis B virus infection. The likelihood of progression to chronic infection is the same whether infection is symptomatic or asymptomatic. People with chronic hepatitis B virus infection have a 15% to 25% risk of dying prematurely from hepatitis B virus-related cirrhosis and liver cancer. People with chronic hepatitis C virus infection are also at high risk for developing cirrhosis and liver cancer. Both superinfection by, and coinfection with, hepatitis D virus in hepatitis B virus-infected patients result in worse outcomes than infection with hepatitis B virus alone; these include a higher rate of liver failure in acute infections and a greater likelihood of developing liver cancer in chronic infections.
3. Exposure to blood through injections with nonsterile equipment or transfusion of contaminated blood products is a common and preventable cause of hepatitis B and C virus infections. Unsafe injection practices are estimated to be responsible for 21 million new hepatitis B virus infections and two million new hepatitis C virus infections a year. A significant proportion of the blood supply is either not screened for hepatitis B or C virus or not screened properly. The probability of transmission of hepatitis B and C viruses through transfusion of unsafe blood can be as high as about 70% and 92%, respectively, depending on the volume transfused and the concentration of virus. In many countries,

injecting drug use represents the highest risk for hepatitis C virus infection, with prevalence rates in people reporting this behaviour ranging between 30% and 60%.

4. It is estimated that about 1.4 million new hepatitis A virus infections occur globally each year. Infection is usually by the fecal-oral route either through person-to-person contact or ingestion of contaminated food or water. 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 cases in some countries and the emergence of community-wide outbreaks of hepatitis A.

5. 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 burden of hepatitis E is unknown.

6. 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 up to 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 and/or control bacterial pathogens.

7. Hepatitis B virus/HIV and hepatitis C virus/HIV coinfections are an increasing problem in countries with concentrated HIV epidemics and among injecting drug users. For those coinfecting persons who are being treated with antiviral medicines, underlying viral hepatitis is becoming a major cause of death.

PREVIOUS HEALTH ASSEMBLY ACTION AND SECRETARIAT ACTIVITIES

8. The Health Assembly has considered specific aspects of hepatitis prevention in past resolutions. First, in 1992, in resolution WHA45.17 on immunization and vaccine quality it urged Member States to integrate cost-effective new vaccines, such as hepatitis B vaccine, into national immunization programmes in countries where it is feasible. The Secretariat acted on this resolution by recommending that all countries integrate hepatitis B vaccine into national immunization programmes by 1997. Support from the GAVI Alliance for the introduction of hepatitis B vaccine has resulted in great increases in vaccination coverage in the past decade. As of 2007, more than 88% of Member States have introduced hepatitis B vaccine; overall coverage with three doses of vaccine was 65%, and globally 27% of newborn infants received the birth dose of hepatitis B vaccine. Secondly, in 2005, in resolution WHA58.22 on cancer prevention and control the Health Assembly called for including reduction in hepatitis B virus infection among the outcome objectives of national cancer control programmes; implementation of this resolution and its monitoring are still in progress. Thirdly, as part of the Global plan of action on workers' health 2008–2017, endorsed by the Health Assembly in 2007 in resolution WHA60.26, the Secretariat's activities would include working with Member States for immunization of health-care workers against hepatitis B. Little progress has been made in the short time since the resolution endorsing the plan was adopted. In addition, the Health Assembly has

considered several hepatitis prevention issues relating to immunization,¹ safe blood supply,² food safety³ and safe injections.⁴

9. In 1998 the WHO-cosponsored Conference Regarding Disease Elimination and Eradication as Public Health Strategies (Atlanta, Georgia, United States of America, 23–25 February 1998) concluded that hepatitis B is “a primary candidate for elimination or eradication”. In 1999, WHO joined UNICEF and UNFPA to recommend the exclusive use of auto-disable syringes for all immunization injections by the year 2003.⁵ Much progress has been made with the support of the GAVI Alliance for the procurement of non-reusable syringes for immunization. WHO has issued position papers on hepatitis B vaccines (2009)⁶ and hepatitis A vaccine (2000).⁷ In 2005, the Western Pacific Region set a goal of reducing chronic hepatitis B virus infection rates to less than 2% among five-year-old children by 2012. In 2008, WHO with FAO convened an expert meeting on viruses in foods in order to provide scientific advice in support of risk-management activities. Recently, the European Region has developed clinical protocols for the management of hepatitis B virus/HIV coinfection, hepatitis C virus/HIV coinfection, and prevention of hepatitis A, B and C virus infections in people living with HIV. In November 2008, WHO’s Strategic Advisory Group of Experts on immunization recommended that “all regions and associated countries develop goals for hepatitis B control appropriate to their epidemiologic situations”. The Regional Committee for the Eastern Mediterranean adopted a resolution (EM/RC56/R.5) for hepatitis B and C control and set a target for reduction of the prevalence of chronic hepatitis B to less than 1% among children below five years of age by 2015 at its fifty-sixth session (Cairo, 3–6 October 2009). Several countries have established national goals for the elimination of transmission of hepatitis B virus.

OPPORTUNITIES FOR PREVENTION AND CONTROL

10. Coordinating programmes for the prevention and control of hepatitis with other related programmes will contribute to the strengthening of health systems in all countries. To date, prevention and control efforts have been successful but fragmented. WHO does not have a comprehensive strategy for viral hepatitis. Thus, the time is right to create new opportunities for prevention, including establishing goals and strategies for disease control, increasing education and promoting screening and treatment of the 500 million or so people already infected with hepatitis B and C viruses. The impact of these efforts on mortality and morbidity will be significant because of the tremendous burden of disease.

¹ Resolutions WHA44.33 on World Summit on Children: follow-up action, WHA53.12 on Global Alliance for Vaccines and Immunization, and WHA61.15 on Global immunization strategy.

² Resolutions WHA28.72 on utilization and supply of human blood and blood products and WHA58.13 on blood safety: proposal to establish World Blood Donor Day.

³ Resolutions WHA53.15 on food safety, WHA56.23 on joint FAO/WHO evaluation of the work of the Codex Alimentarius Commission, and WHA58.32 on infant and young child nutrition.

⁴ Resolution WHA55.18 on quality of care: patient safety.

⁵ Document WHO/V&B/99.25.

⁶ *Weekly Epidemiological Record*, 2009; **84**:405-419.

⁷ *Weekly Epidemiological Record*, 2000; **75**:38-44.

11. Progress has been made in preventing hepatitis B virus infection through immunization of infants. Despite this, coverage with hepatitis B vaccine has not yet reached the goal set by the Global Immunization Vision and Strategy 2006–2015 of 90% national vaccination coverage by 2010 and lags behind global coverage levels for vaccination against diphtheria, tetanus and pertussis. Vaccination of infants at birth, a safe and effective means of preventing perinatal infections that are associated with the worst health outcomes, remains low and is an important element in strengthening health systems as part of efforts to provide services to mother and child around the time of pregnancy. Health-care workers are still not being vaccinated against hepatitis B in most developing countries and vaccination coverage levels are not monitored. Elimination of hepatitis B virus transmission is feasible for future generations, but vaccines are too late to protect those 350 million who already have chronic hepatitis B virus infections.

12. Many new and effective treatments that can significantly delay progression of liver disease, prevent the onset of liver cancer, and reduce deaths are available for the more than 500 million people living with hepatitis B and C virus infection. The challenge remains to ensure that these people have timely access to testing, care and effective treatments, especially in resource-limited settings.

13. Demand for hepatitis A vaccine is increasing in large parts of the world that are experiencing an increase in symptomatic cases and more frequent epidemics because of changing epidemiology. Effective candidate vaccines for hepatitis E prevention exist. Some progress has been shown in developing candidate vaccines against hepatitis C. Further development and increased access to these vaccines for those who would benefit most should be a high priority.

14. Because unsafe health-care practices remain common in many parts of the world, all countries need to make concerted efforts to implement strategies to prevent hepatitis in health-care settings based on safe blood supply and safe injections. Safe injections cause no harm to the recipient, do not expose the provider to any avoidable risk and do not result in any dangerous waste. The primary means of preventing transmission of hepatitis viruses in blood donations is the collection of blood from voluntary, unpaid blood donors who are at low risk of infection. The second means of prevention in blood product transmission is quality-assured screening of all donated blood for hepatitis B and C virus markers. The third strategy is the rational use of blood in order to minimize unnecessary transfusions. Implementation of these strategies needs strengthening. Safe injection devices that are not reusable and have features to prevent needlestick injuries need to be used universally, and the training of all health-care providers on best injection practices, including proper sharps waste management, should be strengthened.

15. WHO is in a position to provide coordinated global support and leadership in the development of a comprehensive approach to prevention and control of viral hepatitis. Elements of this approach apply across the health system.

To prevent the transmission of hepatitis virus through safe and effective public health strategies:

- (a) Immunization against hepatitis B virus infections
 - (i) protecting all persons against infection with hepatitis B virus through full immunization as early in life as possible, beginning with the first dose of hepatitis B vaccine within 24 hours of birth as part of routine maternal and child health services;

- (ii) increasing coverage of hepatitis B vaccination among health-care workers, travellers and other most at-risk persons and ensuring access to post-exposure prophylaxis for blood-borne pathogens;
 - (iii) setting and achieving national goals for hepatitis B control appropriate to the epidemiologic situation.
- (b) Safe health care to prevent transmission of hepatitis B and C viruses and other blood-borne pathogens
 - (i) ensuring safe blood supplies by: recruiting only voluntary, unpaid blood donors; introducing effective blood donor selection and screening of all donated blood for markers of hepatitis B and C virus infection with highly sensitive and specific assays and following basic standardized procedures; and training clinicians and nurses in safe clinical transfusion practices;
 - (ii) ensuring that all injections are safe through sustainable procurement of sufficient quantities of appropriate syringes, training in safe injection practices and ensuring that sharps waste is properly managed and that wider infection-control practices (in the hospital and in community health-care settings) are followed;
 - (iii) increasing awareness among communities and health-care workers of the opportunities to prevent viral hepatitis.
- (c) Immunization and provision of safe food and water in order to prevent hepatitis A
 - (i) guiding implementation of hepatitis A vaccination to prevent hepatitis A in countries with shifting epidemiology;
 - (ii) improving food safety by preparing and introducing international guidelines for the management of viruses and toxins in foods.

To identify and treat those people most at risk for hepatitis virus-related disease with safe and effective therapies:

- (d) Identification and treatment of chronic hepatitis B and C in order to prevent progression to cirrhosis and liver cancer
 - (i) developing evidence and policy basis for screening and treatment of viral hepatitis;
 - (ii) formulating guidelines for treatment of chronic viral hepatitis, especially taking into consideration needs of resource-constrained settings;
 - (iii) expanding care and treatment services for people chronically infected with hepatitis viruses.

To integrate proven public health strategies for preventing viral hepatitis across the health system:

- (e) Integration of interventions for the prevention, treatment and care of hepatitis B and C virus infections (including access to sterile needles and syringes, hepatitis B vaccination and

antiviral treatment) into existing services for those at risk for HIV infection and sexually transmitted infections and those who inject drugs, and into national cancer control programmes. These services and programmes can provide good entry points for both infected and most-at-risk people, and coordination can promote synergies.

To innovate by developing new vaccines and technologies for use in viral hepatitis prevention:

(f) Prioritization of new preventive strategies including development of vaccines for hepatitis C and E virus infection and technologies for vaccination, screening and health care in order to prevent chronic liver disease and liver cancer.

ACTION BY THE EXECUTIVE BOARD

16. The Executive Board is invited to take note of the report and provide further strategic guidance.

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