Viral hepatitis, caused by hepatitis viruses A through E, still remains a major public health problem. India has “intermediate to high endemicity” for hepatitis B surface antigen (HBs Ag) and an estimated 40 million chronic HBV infected people, constituting approximately 11 per cent of the estimated global burden\(^1\). Population prevalence of chronic HBV infection in India is around 3-4 per cent\(^2\). There is a wide variation in HBsAg prevalence in different geographical regions in India. Highest prevalence has been recorded in natives of Andamans and Arunachal Pradesh\(^3\). Chronic HBV infection accounts for 40-50 per cent of hepatocellular carcinoma (HCC) and 10-20 per cent cases of cirrhosis in India. Outbreaks of acute and fulminant hepatitis B still occur mainly due to improperly sterilized needles and syringes, as demonstrated by the recent outbreak of acute hepatitis B in Modasa Town of Gujarat\(^4\).

Population prevalence of chronic HCV infection in India is around 1 per cent. Prevalence of hepatitis C has been observed to be relatively higher in Punjab, Haryana, Andhra Pradesh, Puducherry, Arunachal Pradesh and Mizoram compared to other States. Besides the well known high risk groups like injecting drug users (IDUs), truckers, and attendees of sexually transmitted disease (STD) clinics, in persons suffering from thalassaemia, haemophilia and other disease conditions requiring blood products transfusion, different risk factors have been highlighted which are believed to have led to the relatively higher prevalence of the condition in particular areas. For example, history of surgery, dental treatment and unprotected sex (in Punjab)\(^5\), unscrupulous practices of healthcare providers in Ratia block of the Fatehabad district, Haryana\(^6\), intra venous drug users (IVDU) in north-east India\(^7,9\), cultural practices such as tattooing, traditional medicine (e.g. bloodletting), rituals among pilgrims (e.g. scarification) and body piercing (in Andhra Pradesh)\(^10,11\).

HAV and HEV are important causes of acute viral hepatitis and acute liver failure in India. A total of 315 outbreaks of viral hepatitis have been reported from 2010 to 2013 and 99 outbreaks in 2013 alone by Integrated Disease Surveillance Programme (IDSP) to National Centre for Disease Control (NCDC)\(^12\). HAV infection is responsible for 10-30 per cent of acute viral hepatitis and 5-15 per cent of acute liver failure (ALF) cases in India. HEV infection is responsible for 10-40 per cent of acute hepatitis and 15-45 per cent of ALF in India\(^13\). Acute HEV has inordinately high mortality rate of 15 to 25 per cent in pregnant women in the third trimester\(^14\).

Spread of viruses causing hepatitis has three components, an infectious source, a susceptible host and an established route of transmission. Various strategies for control of viruses causing hepatitis would include control of infectious source, immunization of the host (susceptible subjects) and interruption of all routes of transmission (Figure).

Control of infectious source and providing free treatment of existing patient pool

Control of infectious source can be achieved for hepatitis B and C by treating the existing subjects infected with HBV and HCV so that viral load can decrease to undetectable levels, and the infection does not spread rampanty. However, the cost of treatment for chronic HBV and HCV infections is prohibitive for a large proportion of patients. There is a need to develop a mechanism to provide free drugs to needy patients, in similar lines to National AIDS Control Organization

---

This editorial is published on the occasion of World Hepatitis Day - July 28, 2014.
(NACO) providing free HIV drugs to patients infected with HIV. This is one of the most important ways to prevent further transmission of HBV and HCV and needs to be implemented on priority.

For hepatitis A and E, there are no specific treatments having a bearing on the control of infectious source. However, safe water and food and awareness on public health measures need to be rapidly implemented.

**Immunization of the host (susceptible subjects)**

The other strategy is to protect the susceptible host by immunization, and this is the most effective strategy. The hepatitis B vaccine has been included in the Global Alliance on Vaccines and Immunization (GAVI) since 2000. HBV vaccine had been included in the national immunization programmes of nearly 175 WHO member countries by the end of 2009. In India, hepatitis B vaccination programme was initially launched in 2002 with gradual expansion to cover all districts in 10 States of the country in 2007-08. However, still many challenges remain to be addressed including lower coverage with three doses of hepatitis B vaccine than similarly timed three doses of DPT vaccine. A review of the existing framework for vaccine distribution and immunization is urgently needed and targets to be set for achieving near 100 per cent coverage in the universal immunization programme (UIP) for hepatitis B by 2020.

Although health care expenditure in India is also gradually being increased through the years, yet, it is still low. Total expenditure on health care in India, taking both public, private and household out of pocket (OOP) expenditure was about 4.1 per cent of GDP (gross domestic product) in 2008-2009, which was comparable to other developing countries at similar levels of per capita income. However, the public expenditure on health was only about 27 per cent of the total in 2008-2009, which is very low by any standard. Twelfth Plan outlay for the Ministry of Health and Family Welfare has been increased by 335 per cent (from 89,576 crores in 11th plan to 300,018 crores). In the Abuja Declaration of 2001, African Heads of State committed to ensure that 15 per cent of overall government expenditure goes to health. We do hope this aspirational goal could be implemented in India in the new environment. Hepatitis A (HAV) is endemic in India and most of the population is infected asymptptomatically in early childhood with lifelong immunity. Hepatitis A infection in adults often leads to serious complications. In highly endemic countries large scale immunization efforts are not recommended and in low endemicity areas immunization of high risk populations is recommended. India has traditionally been a high endemicity area. There is evidence of epidemiological shift from high endemicity to intermediate endemicity for the affluent population in various cities across India. In the absence of appropriate steps, epidemics of hepatitis A are likely to occur in the susceptible population with severity of the disease increasing with age. Although there is some evidence of changing epidemiology in select areas, mass or targeted HAV vaccination should not be recommended for India as a public health policy.
HEV vaccine is likely to be available soon in India. Pregnant women and patients with cirrhosis would be priority groups for HEV vaccination. However, several issues remain including lack of population data regarding disease incidence, mortality rate and disease burden and rate of clinical hepatitis E among pregnant women; duration of protection of the vaccine; protection against large viral load and/or severe disease; safety in pregnancy; effect on virus excretion not known. Besides there would be programmatic issues such as targeting vaccines to adults and pregnant women and cost. Currently there is no marketed vaccine for HCV.

** Interruption of routes of transmission**

Interruption of transmission of viral hepatitis can be achieved by education and increasing the awareness of the public and medical personnel; improved sanitation and safe drinking water (for HAV/HEV prevention); and emphasizing the importance of safe blood and injections.

*Increasing the awareness of the public and medical personnel:* Education of public and health care professionals will help in identification of persons at risk for viral hepatitis and ensure appropriate counselling, diagnosis, medical management, and treatment. In India, it has been reported that more than 93 per cent of injections are unsafe. Improperly sterilized needles and syringes are still an important cause of transmission of hepatitis B in India, as demonstrated by the recent outbreak of hepatitis B in Modasa Town of Gujarat. A large proportion of health care workers (HCWs) in India are not vaccinated and many are unaware of their vaccination status, thus making them vulnerable to blood borne infections. There is an urgent need for implementing mandatory vaccination and immunization for all HCWs in India. There is also a need for strict implementation and monitoring of safe injection practices in Indian health care system.

World Hepatitis Day on 28th July is one of eight official global public health campaigns marked by the World Health Organization. December 4 is celebrated officially in Delhi as “Hepatitis Awareness Day” since 1998 and it plays an important role in spreading awareness amongst public and health care professionals about hepatitis in Delhi, India.

*Improved sanitation and safe drinking water:* Improving sanitation and providing safe drinking water is important for preventing HAV and HEV. The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) is the formal instrument to measure Millennium Development Goal (MDG) 7 target C: to halve, by 2015, the proportion of people without sustainable access to safe drinking-water and basic sanitation. Nearly 60 per cent of the world's population who practice open defaecation live in India. Although much progress has been made as exemplified by increase in sanitation coverage in rural India from 21 per cent in 2001 to 42 per cent in 2010, and 17 States had already achieved MDG 7 target in 2011, a focus on safe water sanitation will go a long way in viral hepatitis (A and E) prevention.

*Importance of safe blood:* Risk of transmitting infection to recipients from blood products has been drastically reduced in the past decades, but there still remains residual risk mainly due to window period donation which accounts for 90 per cent or more of the residual risk. As a screening tool, individual donor nucleic acid testing (NAT) detects infection before serological tests 10-16 days earlier for HIV-1, 49 - 65 days for HCV, and 25-36 days for HBV.

Blood safety is a challenge in India because of the high prevalence of HIV, HCV, and HBV, the relatively low percentage of volunteer donors and the lack of standardization of screening procedures among the multitude of blood collection centers. Centralized NAT screening centres are hugely successful all over the world. This tool could provide the next large step in improving the safety of blood supply in our country.

We have sufficient if not adequate data on the disease burden and modes of spread of viral hepatitis in India. It is time to act now. The goal of eradicating HBV is plausible, but every endeavour has to be pursued to make it become a reality by the year 2080. If we design our programme clearly, the target can be achieved in 65 years, with a new generation of immunized healthy babies growing up. Similarly, HAV vaccination strategies need to be revisited. India needs an HEV vaccine and its development and early availability should be made a priority. Education and awareness among public and health care workers about viral hepatitis need to be increased. Safe drinking water and sanitation should become a priority. A dedicated trained public health cadre for viral hepatitis as was done for HIV, is the need of the hour. Safe injection practices and blood safety are important components in viral hepatitis prevention. There is a need for National Viral Hepatitis Prevention and Management Strategy with focus on various aspects of viral hepatitis prevention and management.

Though there are still many challenges in prevention and eradication of viral hepatitis in India, if all the stakeholders come on a common platform and
join hands and initiate a comprehensive action plan this year, we could achieve the targets of viral hepatitis eradication by 2080 and declare India ‘Free of viral hepatitis’.

Manoj Kumar & Shiv K. Sarin
Department of Hepatology
Institute of Liver and Biliary Sciences
New Delhi 110 070, India
*For correspondence:
shivsarin@gmail.com

References