Almost four decades of science, innovation, and programmatic effort to control and prevent vaccine-preventable viral hepatitis have paid off spectacularly well in China. In the pre-vaccine era, nearly 10% of children were infected by hepatitis B virus (HBV) — especially during childbirth — causing them to be lifelong carriers of HBV, able to infect others, and in great danger of liver cancer and cirrhosis as adults (1). Most young children were infected by hepatitis A virus (HAV), with a lifetime infection rate of 90%, keeping this virus in circulation and causing outbreaks among older children and adults who could become quite ill from hepatitis A (2).

Fast-forward to the present day, and the landscape is markedly changed for the better. The current generation of children in China is the first generation to be almost completely free of hepatitis B and protected for life (3); the incidence of hepatitis A is extremely low in China as vaccine-induced immunity has replaced infection-induced immunity among children; and a third viral hepatitis — hepatitis E — is now preventable by vaccines developed and licensed in China (4).

Vaccines can take partial credit for these successes since they could not have been achieved without vaccines, but the vaccines were deployed in the context of a strategic strengthening of maternal and child health and childbirth practices — for hepatitis B prevention — and improvements in sanitation — for hepatitis A and hepatitis E prevention. Integration of vaccination and health system and sanitation improvement was not only essential for control of these infections, but also brought benefits beyond viral hepatitis prevention and control. For example, China was an early participant in the United Nations International Children’s Fund (UNICEF)-coordinated Safe Motherhood Initiative that improved childbirth practices in many countries around the world (5). Bringing childbirth into birthing centers and hospitals in China not only made childbirth safer, preventing potentially deadly post-partum hemorrhage and significantly reducing the maternal mortality rate, but also provided an effective platform for administration of a timely birth dose of hepatitis B vaccine to the newborn infant. More hygienic birthing practices also enabled elimination of maternal-neonatal tetanus — a major accomplishment that was verified in 2012 by the World Health Organization (WHO) (6).

There is critically important remaining work for prevention and control of these three vaccine preventable diseases (VPDs) in China. Most importantly, the nearly 90 million individuals living with HBV infection, who were born before hepatitis B vaccine was widely available in China, are in need of identification and clinical management to prevent progression to cirrhosis, liver cancer, and premature death (7). Although there has been a 97% reduction in maternal-to-child transmission of HBV, there are an estimated 50,000 breakthrough chronic infections of newborn infants every year (3), which necessitates tightening the program and providing antivirals during pregnancy for certain HBV carriers to prevent transmission during childbirth. The rapid decline in the incidence of hepatitis A following introduction of hepatitis A vaccine in 2007 resulted in many children born in the years immediately prior to the vaccine’s introduction to be neither infected nor vaccinated — allowing a gap in population immunity among 10-to-20-year-olds in China that leaves some people susceptible to HAV infection (2). The public health significance of this immunity gap is yet to be determined but will be important to understand and possibly act upon. Finally, because there is insufficient experience with the relatively new hepatitis E vaccine, the roles of the hepatitis E vaccine in outbreak responses and routine immunization have not been fully determined (8). Although Hepatitis E vaccine is eligible for WHO prequalification, it has not yet been submitted for prequalification, limiting its use overseas and depriving much of the world of this prevention tool.

Even though there is much work to be done, China has clearly traveled a great distance in the prevention and control of vaccine preventable hepatitis. China’s comprehensive approaches to the prevention and control of hepatitis B and hepatitis A can serve as
highly relevant in many Gavi-eligible countries. Viral
strengthening the maternal health system could be an approach to hepatitis B prevention through countries in 2021 (12). China’s comprehensive Collaborating Center, the number of opportunities to contribute to the elimination of viral hepatitis will greatly increase. In a bit of good timing, Gavi recently approved support of the hepatitis B birth dose and will begin investing in the birth dose in Gavi-eligible countries in 2021 (12). China’s comprehensive approach to hepatitis B prevention through strengthening the maternal health system could be highly relevant in many Gavi-eligible countries. Viral hepatitis prevention and control could become a focus of the Belt and Road Initiative on health, which includes many Gavi-eligible countries. In short, exporting China’s successes on prevention and control of vaccine preventable hepatitis can and will make the world a healthier and safer place for all.


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REFERENCES
