



Commentary

Communicable Episode 06: “Sneaky viruses”- an update on hepatitis B & C before World Hepatitis Day



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In light of World Hepatitis Day on 28 July, *Communicable* releases its topical sixth episode a few days early, “Sneaky viruses”: an update on hepatitis B & C. Sharing the same date as the birthday of Nobel laureate Baruch “Barry” Blumberg, the physician and geneticist who discovered hepatitis B and later developed its diagnostic test and the first vaccine, World Hepatitis Day is dedicated to raising awareness about viral hepatitis. The theme this year is: “It’s time for action” [1]. Hosts Angela Huttner and Oana Săndulescu welcome leading hepatitis expert, Professor Mojca Maticič of University Medical Centre Ljubljana and University of Ljubljana to refresh and update *Communicable* listeners on viral hepatitis.

Viral hepatitis is an infectious disease of the liver that can be caused by several viruses with primary or secondary hepatic tropism, among which hepatitis B virus (HBV) and hepatitis C virus (HCV) are the focus of this episode. Combined, hepatitis B and C remain a significant global health challenge not just for the staggering 1.3 million death toll and 2.2 million new infections per year, but also for the 304 million people living with chronic HBV or HCV infection and their associated health-care costs [1]. HBV and HCV are viruses that infect hepatocytes and transmit parenterally, sexually, and from mother to child [2]. Approximately 10% of those acutely infected with HBV, and the majority of those acutely infected with HCV will eventually develop chronic infection, which can lead to progressive liver damage, and the development

of fibrosis, cirrhosis, hepatocellular carcinoma, or extrahepatic manifestations.

Currently, key populations most at-risk for acquiring HCV are people who inject drugs, prisoners, and men who have sex with men, especially those also living with HIV [3]. Major scientific breakthroughs have transformed the landscape of hepatitis C treatment, evolving from interferon-based therapies in the 1990s to direct-acting antivirals (DAAs) initially added on to pegylated interferon and ribavirin, and followed by interferon-free regimens and pan-genotypic DAAs in the mid-2010s. The wider uptake of DAA treatment in the past ten years has led to sustained virological response (SVR), which is the equivalent of virological cure of HCV infection, in millions of persons [4]. Importantly, many patients who achieve SVR still require specialized monitoring for hepatocellular carcinoma, especially those with a certain degree of liver fibrosis or who already had specific comorbidities before starting treatment. The European Association for the Study of the Liver (EASL) has recently provided guidance regarding which patient groups should be prioritised for follow-up, and how they should be monitored [4].

Early detection of HCV infection remains a critical factor, improving chances of curing the infection as well as preventing the occurrence of liver fibrosis and progression of liver disease. The caveat, as Prof. Maticič explains, is that HCV is “very sneaky” and individuals who have the

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infection are largely asymptomatic and unaware of having a chronic infection. As a solution, Prof. Matičič recommends a preventative approach requiring high-level organisation involving government-backed programmes that make testing and treatment accessible to the general population including at-risk groups, and actively facilitating hepatitis C elimination [5,6].

The World Health Organization (WHO) kickstarted an initiative calling for global orchestrated efforts to eliminate hepatitis C as a public health threat by 2030 [7]. While the task is ambitious, successful initiatives by Egypt and Slovenia prove it can be done. Egypt, once burdened with the highest HCV prevalence of 10%, employed a macro-elimination approach and remarkably dropped to 0.4% HCV prevalence. The country was the first to achieve WHO validation on the path to hepatitis C elimination [8]. Slovenia implemented a micro-elimination approach focusing on testing, treating and curing several high-risk groups, and thus positioning the country for HCV elimination by 2030 [6]. Despite important efforts, there is still a lot of work ahead with countries varying in degrees of prioritisation and with finite resources allocated for hepatitis C testing and treating.

For hepatitis B, on the other hand, current treatment options do not yet permit a complete cure, in which the chromosomally integrated HBV DNA is eliminated from the nuclei of the hepatocytes. Treatment with nucleoside or nucleotide analogues can achieve disease control (normalised alanine aminotransferase levels and undetectable plasma HBV DNA, but positive HBsAg) and in some cases, functional cure (negative HBsAg). The ultimate goal in curing hepatitis B is striving to clear the covalently closed circular DNA from hepatocytes however, much research is still needed in this respect [9].

While there is no complete cure, a vaccine against hepatitis B exists, and the infection is thus preventable by active immunisation. The WHO global health sector strategy on viral hepatitis places important emphasis on vaccination against hepatitis B, and key coverage indicators include achieving 90% coverage with a timely birth dose of HBV vaccine and 90% coverage with three doses of HBV vaccine among children by 2030 [10]. Additional measures to prevent mother-to-child transmission

include expanded indication for antiviral treatment in pregnant women with HBV infection [11]. By preventing new cases and focusing on the development of new therapeutics to treat cases with chronic hepatitis B, it could eventually be eliminated as a public health threat.

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