

# Viral hepatitis in Saudi Arabia

## *An unfinished story*

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The story of viral hepatitis in the Kingdom of Saudi Arabia (KSA) is worth telling, not for some tragic narrative of missed opportunities, but rather for its rare instance of stunning success. The country has witnessed a steady decline in prevalence of all 3 common hepatotropic viruses during the past 3 decades, in part attributed to better living conditions, universal blood bank screening, and increased awareness of safe social and clinical practices, but also in part by the implementation of childhood immunization against hepatitis B virus (HBV).<sup>1</sup> However, the story for all 3 viruses is not entirely similar. Since hepatitis A virus (HAV) prevalence is strongly affected by the community's social development, and given the marked improvement in the Saudi community in terms of education, housing conditions, water sanitation, gross domestic product, and consequent healthcare improvements, it is not surprising to see HAV declining sharply. The anti-HAV prevalence rate in KSA was recently estimated at 18.6%, a considerable drop from the 90-100% rates reported only 2 decades ago in the adult population.<sup>1</sup> A comparative study that monitored prevalence of HAV infection in a single population cohort of children from 1989-2008, and spread over 3 regions of KSA found a significant linear decline from 53% in 1989 to 25% in 1997, and finally to 18.6% in 2008.<sup>2</sup>

Similarly, the prevalence story of HBV has witnessed its own dramatic course in the last 20 years, from a picture of worrisome hyperendemicity to one of low prevalence.<sup>1</sup> The first large-scale community-based epidemiological study conducted on Saudi children showed an HBsAg seroprevalence of approximately 7%,

and a greater than 70% prevalence of at least one HBV marker.<sup>3</sup> It thus triggered a successful collaboration between scientists and government agencies towards establishing universal HBV immunization in the country, which started in 1989. A catch-up vaccination program supplemented this in 1990 for children at school entry, healthcare workers, and other high-risk groups. As a result of these programs, virtually all Saudis aged 24 years or younger as of October 2007 had been vaccinated either at birth, or at school entry.

Since the initial survey in the late 1980's, follow up prevalence studies in children have reassuringly shown a decline in HBV to negligible numbers, demonstrating that the HBV vaccination program is bearing fruit.<sup>4</sup> As anticipated, this has translated into overall low infection rates, reflected by the premarital screening data in 2008 among 74,662 individuals of whom 1.31% tested positive for HBV.<sup>5</sup> The narrative is similar with supporting epidemiological studies, which speak of a marked reduction in the prevalence of HBV in KSA, averaging approximately 1.5% in general, and 2.6% within the adult population.<sup>6-8</sup>

While this part of the prevalence story seems bright and reassuring, the picture is way less clearer for the overall population, particularly in older individuals. There is a clear lack of properly conducted, adequately sampled, large-scale nationwide studies on the prevalence of HBV, particularly for the population aged over 40 years. In addition, there is a lack of accurate data on the estimated number and clinical characteristics of infected patients in terms of liver disease burden.

Unlike HBV, the data on HCV prevalence in KSA is both, limited and conflicting in disease estimation.

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Saudi blood donor screening centers indicate HCV infection rates of 0.4-1.1%.<sup>6-9</sup> Data from the premarital screening program estimates a prevalence of 0.33%.<sup>5</sup> A recent systematic review including all published studies on the subject estimated that the prevalence ranges from 1.0-1.9%.<sup>10</sup> The lack of a properly carried out community based epidemiology study has obvious consequences on resource planning and allocation, and poses considerable difficulties to the country's health-care authorities.<sup>11</sup> Furthermore, in some special populations, the prevalence of HCV is much higher than the general estimates like for instance in patients with end stage renal disease on hemodialysis.<sup>5</sup>

In a recent review on the subject, we have estimated, based on available literature, that despite being able to break the cycle of horizontal and childhood transmission of HBV, and controlling the risk posed by HCV by implementing safe clinical practices, the Saudi healthcare system is still confronted with approximately 50,000 viral hepatitis-related cirrhotic patients.<sup>1</sup> These patients are prone to decompensation, and are at risk for hepatocellular carcinoma and liver-related mortality. Nonetheless, such numbers remain best guess estimates, distinctly stressing the need for properly conducted, adequately sampled, large-scale, nationwide surveys for HBV and HCV, where the prevalence across all population sectors, age groups, and geographic distributions is properly estimated. The Ministry of Health must lead and fund such an initiative, and execute it jointly with Saudi scientists and public health experts.

**Conclusions and recommendations.** Significant epidemiological data has been generated for viral hepatitis in KSA, with tangible declines in the prevalence of all 3 common viruses. However, now is not the time to rest on our laurels, for relevant gaps still remain. These include accurate estimates of prevalence in the general population, identifying risk factors of disease transmission, and local data on response to therapy and its impact on disease evolution. This huge challenge facing our medical community must be effectively tackled with a comprehensive, widely adopted, national hepatitis plan, that starts from awareness and education, emphasizes prevention, sets up early detection programs, guarantees proper and timely assessment, and provides the recommended treatments in a cost-effective and evidence-based manner. This effort should be led by robust research machinery that is able to predict, rationalize, and assess its effectiveness,

and subsequently modify this strategy. Achieving such goals will not be possible without putting hands together, forging alliances across different institutes and affiliations, involving patients and community partners, and most importantly having an enforcement power to guarantee the plan's implementation. Part of the epidemiological equation entails understanding the disease demographics, and towards this an access to a national registry for viral hepatitis is crucial. And eventually this will set the stage for the Saudi model to be recognized as a worthy experience that can be studied and replicated as the most important public health intervention of the region.

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