



## Hepatocellular Carcinoma: Pay Now or Pay More Later

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The incidence of hepatocellular carcinoma (HCC) is increasing in many Western countries,<sup>1</sup> including the US and Canada. Although this is alarming, more alarming is that HCC can be regarded as the canary in the mine-shaft. HCC is a barometer of liver health in a nation, and the increasing prevalence of HCC in the West is an indicator of the increasing prevalence of late stage and end-stage liver disease. In North America this increase is driven by several factors. First is the aging of the population of individuals with chronic hepatitis B and hepatitis C, and second the increasing prevalence of non-alcoholic fatty liver disease (NAFLD). In North America chronic hepatitis B is largely a disease of immigrants, particularly from high prevalence areas, such as China, Vietnam, Korea, the Philippines and Africa. Hepatitis C is also a disease of immigrants, although the distribution of high prevalence areas is somewhat different than hepatitis B. In addition there is a “home grown” epidemic of hepatitis C, i.e., individuals who became infected in North America through routes such as injection drug use, and recently recognized medical misadventure from vaccination and other medical procedures in the 1950’s and 60’s, when sterilization of medical equipment was less rigorous than today.<sup>2</sup> Today non-alcoholic fatty liver disease (NAFLD) is the most prevalent liver disease in North America, and although the incidence of HCC in NAFLD cirrhosis is lower than in cirrhosis due to viral hepatitis the huge numbers of individuals with NAFLD make this a threat for the future.

In this edition of the journal Golabi, *et al.* address the issue of the medical costs associated with HCC, using the SEER database.<sup>3</sup> Their study suggests that patients with HCC cost more than patients with viral hepatitis who don’t have HCC, and die sooner than those without HCC.

These conclusions are not surprising. They matched patients with viral hepatitis and HCC with patients with viral hepatitis but no HCC. There are few details about the matching so it’s not possible to assess the accuracy of the process. For example, one of the conclusions is that those with HCC are somewhat older than those without HCC. If one were simply comparing medical costs in the whole population, irrespective of disease one would expect a younger population to have lower medical costs, so it is not clear that the increased costs reported here are due to HCC or to simply being measured in an older population. Matching could take this into account, but that granularity of data is missing.

One would also like to know how the costs of HCC compare to the costs of other terminal and pre-terminal diseases. This data is not provided. Costs related to an individual’s final illness are always high, no matter what the diagnosis. For the policy makers it is important to know whether the costs related to HCC terminal care are out of line with costs of other end-stage and pre-terminal diseases. If the HCC costs were substantially higher one could make the argument that it makes economical sense to attempt to limit the incidence of HCC. If the costs were similar or lower then different policy considerations might be applied. The question then becomes; which costs more, treating the HCC or treating the conditions that lead to HCC. From an ethical standpoint it would seem that the conditions that lead to HCC should be treated. Prevention is better than cure. However, for HCC this comes down to knowing whether the predisposing condition is present or not, i.e., should some form of screening be instituted. No-one would argue that patients with hepatitis B or hepatitis C should be treated if diagnosed (although financial considerations might restrict the timing of that treatment). However, if you don’t know who has hepatitis C or hepatitis B then the ethical argument for

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treatment does not arise. So if the costs of screening and treating are too high then policy makers can justify not screening. Hepatitis C is a case in point. In the US the CDC has recommended one time screening for “baby boomers”.<sup>4</sup> In Canada there is a recommendation against screening adults who are not known to have HCV risk factors.<sup>5</sup> One of the drivers for this recommendation was the high cost of treatment. However, as we all know, in the absence of screening or some sort of serendipity HCV remains undiagnosed until presentation with liver failure or cirrhosis. Data such as this are necessary to convince policy makers that HCV screening is necessary.

There have been other studies of the costs related to viral hepatitis, liver failure and HCC. The conclusions are similar to this study, i.e., that treating HCC is expensive and that the overall costs are increasing as the incidence increases.

Other conclusions from this study are that there are minor differences between HCC in chronic hepatitis B and chronic hepatitis C. There was a smaller proportion of HCC patients with hepatitis B who received liver transplantation (7.3% vs. 8.9%). Either way, this study confirms that only a small proportion of patients with HCC will receive a liver transplant. HCC management strategies at a policy level should not have liver transplant as the apogee of HCC treatment. Yet in the USA and to a lesser extent in Canada the role of liver transplant as a treatment for HCC remains prominent in many discussions around HCC treatment.

This study therefore serves as a timely reminder that management of HCC is expensive, but it also suggests, contrary to some assertions, that there is little difference in HCV- and HBV-related HCC. Finally, it also suggests that more attention needs to be paid at a policy level to managing these predisposing diseases to minimize the fu-

ture costs related to HCC. This will be particularly true in future when hepatitis C is no longer a major cause of HCC and the current generation of hepatitis B infected individuals die off and are not replaced thanks to vaccination. Then NAFLD will be the major cause of HCC. Approximately 1/3 of the US and Canadian population are overweight (about 112 million people). NAFLD may afflict the majority of these individuals. A back of the envelope calculation suggests that about 15% of those with NAFLD will develop bad liver disease. If 10% of those develop HCC in their lifetimes this means that there will be approximately 1.7 million new cases of HCC over the next few decades. If each case costs \$50,000-\$60,000 the total cost will exceed \$850 billion.

Policy makers take note!

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