Reviewer's report

Title: Direct economic burden of hepatitis B virus related diseases: Evidences from Shandong, China

Version: 3 Date: 15 March 2012

Reviewer: David Hutton

Reviewer's report:

Notes on Direct economic burden of hepatitis B virus related diseases: Evidences from Shandong, China

Chronic hepatitis B is an important public health challenge in China. This can be a very expensive disease to those afflicted with end-stage liver disease associated with chronic hepatitis B. This study clearly shows high costs for individuals hospitalized for hepatitis B-related disease. However, while the results are interesting, there are several challenges with this study that make it difficult to use for making policy decisions (which I think is the goal for the authors). The two main challenges are

1. These results may not apply to “average” individuals infected with hepatitis B
2. Readers cannot discern whether the detailed results in tables 3-5 are statistically significant.

Major Compulsory Revisions

The first main challenge is that the results do not apply to the general population chronically infected with hepatitis B. This sample is based on individuals who have come into the hospital as inpatients. So, it does not capture the full burden of disease because it does not survey individuals infected with hepatitis B who do not happen to go to the hospital as inpatients. Many individuals without end-stage liver disease may not need to be hospital inpatients. For example, the study by Hu and Chen (your citation 3), only 11-21% of patients with chronic hepatitis B reported having an inpatient visit and only 23-34% of compensated cirrhosis patients reported having an inpatient visit. So, this study of Shandong may overestimate the average costs for individuals with these disease conditions since presumably the individuals with these conditions who did NOT go to the hospital had lower health care expenditures. (on page 10, the authors do say that hospitalization accounts for 84.86% of total direct medical costs). If we go back to the study by Hu and Chen, they report annual direct costs of 146-373 for chronic hepatitis B and 163-718 for compensated cirrhosis. This is significantly less than the 4115 for chronic hepatitis B and 6803 for compensated cirrhosis reported in this study.

So, the authors should note this (that their sample only includes inpatients) as a limitation. This limitation is likely to be much more important for estimating average costs for chronic hepatitis B and compensated cirrhosis than for
decompensated cirrhosis or liver cancer (since those latter two health states are much more likely to require inpatient care and thus the sampling method employed in this study would be more likely to capture a representative sample of individuals with those conditions).

This paper does have the potential to add to knowledge in that it breaks out costs by type, it estimates direct out-of-pocket expenditures for HBV, it examines the impact of insurance coverage, and it compares costs to disposable household income. However, the second main challenge is that it is difficult to understand if the differences in different groups (Tables 3, 4 and 5) are statistically significant. The only “N’s” and standard deviations are in table 1. But, these numbers are not sufficient to understand if differences are meaningful or due to random chance in the following tables. For example, direct medical costs and direct nonmedical costs in this study are higher for compensated cirrhosis than decompensated cirrhosis. That seems counterintuitive since decompensated cirrhosis is a more severe disease (and this runs counter to all other studies of hepatitis B disease costing I have seen). It would be good to see more standard deviations or know the total numbers of patients with each disease classification to get a better sense of the “precision” of these cost estimates (perhaps there were not many decompensated cirrhosis patients and the decompensated cirrhosis costs were lower than compensated cirrhosis due to “random chance”). Because of this, it is hard to make generalizations about costs for different types of patients.

If the authors were to examine these differences more carefully, presumably there could be more nuance in the discussion and conclusions based on this information. Currently, the conclusion is generally “hepatitis B is expensive”. But, many other studies already show that. Are there more nuanced conclusions like, “costs of end-stage liver diseases caused by hepatitis B like decompensated cirrhosis and liver cancer can consume up to or more than a family’s annual disposable income. Coverage for these disease conditions should be a priority for future health reform.”? If there are more nuanced conclusions, it would be nice to see them.

Minor Essential Revisions:

Authors should define “severe hepatitis B”. When I have seen the term “severe” for hepatitis B, it usually is used in conjunction with “acute” hepatitis B or reactivation. The authors should clarify what the definition of “severe hepatitis B” is.

Overall, the paper needs some minor adjustment of the English writing for clarity and readability (for example “disposal household income” on page 10).

At the bottom of page 8, can the authors explain what the differences in definition are between “household”, “per-capita household”, and “individual” and how these different numbers can or should be interpreted?

Level of interest: An article of limited interest
Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests