



# Missed Opportunities: Undertreatment of Hepatitis B Infection

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## BACKGROUND

- Worldwide, about 350 million people have serologic evidence of hepatitis B (HBV) infection, as defined by a positive hepatitis B surface antigen (HBsAg). A significant proportion of these patients have ongoing viral replication and a necroinflammatory host immune response, and may progress to develop decompensated liver disease and hepatocellular carcinoma.
- Safe, effective treatments for chronic HBV infection are now available, but our anecdotal observations suggest that many primary care providers remain unaware of these treatments.

## STUDY AIMS

- To quantify the rates of treatment of HBV infection among patients at a large, tertiary-care county hospital. We also sought to determine if patients were receiving adequate laboratory evaluation of HBV infection (i.e. to identify those eligible for HBV treatment).

## METHODS

- We identified patients at Harbor-UCLA Medical Center who tested positive for hepatitis B surface antigen (HBsAg) between January 1994 and April 2006.
- Using a standardized instrument, we reviewed patients' medical records to determine if they were receiving therapy for HBV infection. We recorded clinical and demographic characteristics that we had hypothesized to be associated with receiving HBV treatment.
- We performed bivariate and multivariate analyses to determine which factors were associated with receiving HBV therapy.

## RESULTS

- A total of 1,273 patients with positive HBsAg between 1994 and 2006 were identified. To date, medical records have been reviewed on 606 of these patients.
- Patients were predominantly male (60%) and Asian (43%). HIV co-infection was present in 14% of patients. Additional evaluation of HBV infection (i.e., HBeAg and/or HBV DNA) was performed in 29% of patients, and 6% of patients had a liver biopsy.
- Of the 606 patients whose charts were reviewed, 95 (16%) received HBV treatment. Tables 1 and 2 show variables associated with receiving HBV treatment.

Table 1. Variables Associated with HBV Treatment: Bivariate Analysis

Variable	Treated (%)	Odds ratio (95% CI)	p value
<b>Gender</b>			
Male	21%	3.3 (1.9-5.7)	<0.0001
Female	7%	ref	
<b>Race</b>			
White	15%	ref	0.02
African-American	21%	2.1 (1.0-4.4)	
Asian	13%	0.9 (0.4-1.8)	
Hispanic	16%	1.1 (0.5-2.5)	
<b>HIV serostatus</b>			
Positive	54%	11.1 (6.6-18.5)	<0.0001
Negative	9%	ref	
<b>Liver biopsy</b>			
Performed	50%	6.4 (3.2-12.8)	<0.0001
Not performed	14%	ref	
<b>HBeAg and/or HBV DNA</b>			
Sent	30%	3.8 (2.4-6.0)	<0.0001
Not sent	10%	ref	
<b>Variable (Mean ± SD)</b>			
Age (years)	Treated (n=95): 40.6 ± 10.3	Untreated (n=511): 45.1 ± 14.1	0.0003
Number of visits to GI clinic	2.6 ± 4.9	0.3 ± 1.1	<0.0001
Duration of known HBV infection (years)	3.4 ± 3.1	1.5 ± 2.5	0.007
Most recent healthcare contact (date)*	Feb 2004 ± 2.6 years	Dec 2002 ± 2.8 years	0.2
Peak ALT (x upper limit of normal)	5.1 ± 11.6	6.3 ± 14.4	0.02
Lowest serum albumin (g/dL)	2.7 ± 0.9	3.2 ± 0.8	0.03

\* Defined as contact with Harbor-UCLA Medical Center or its affiliated clinics.

## RESULTS (cont.)

Table 2. Variables Associated with HBV Treatment: Multivariate Analysis

Variable	Odds ratio (95% CI)	p value
Male gender	2.2 (0.9-5.2)	0.09
<b>HIV-positive status</b>	<b>21.7 (9.2-51.6)</b>	<b>&lt;0.001</b>
Liver biopsy performed	3.4 (0.9-12.2)	0.06
HBeAg or HBV DNA sent	0.7 (0.2-2.5)	0.6
<b>Number of GI visits</b>	<b>1.3 (1.1-1.6)</b>	<b>0.001</b>
<b>Duration of known HBV infection (years)</b>	<b>1.2 (1.0-1.3)</b>	<b>0.04</b>
<b>Most recent healthcare contact</b>	<b>1.0 (1.0-1.0)</b>	<b>0.03</b>
Peak ALT (x upper limit of normal)	1.0 (0.9-1.0)	0.5
<b>Lowest serum albumin (g/dL)</b>	<b>0.6 (0.3-0.8)</b>	<b>0.006</b>

## CONCLUSIONS

- At our center, only a minority of patients with documented HBV infection received HBV treatment.
- Factors that were independently associated with receiving HBV treatment included: HIV co-infection, more visits to gastroenterology clinic, longer duration of HBV infection, lower serum albumin, and more recent healthcare contact.

## IMPLICATIONS

- At our center, HBV infection is frequently diagnosed. However, treatment of infected patients is uncommon despite the availability of safe and effective treatments.
- Further research is needed to validate these findings in other populations and understand barriers to receiving therapy for HBV infection.

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