# Rate of Seroconversion and Seroclearance in Patients with Chronic Hepatitis B Infection

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## ABSTRACT

Infection with Hepatitis B Virus remains a significant global public health concern. Chronic infection can lead to irreversible complications, namely hepatic cirrhosis and hepatocellular carcinoma. The main goals of treatment are to reduce viral loads and achieve seroconversion and eventually seroclearance in order to minimize the risk of progression to these deleterious outcomes. This study examined the rate of seroconversion and seroclearance among patients with Chronic Hepatitis B under review in University Hospital Limerick with a view to improving management.

## INTRODUCTION

Infection with Hepatitis B Virus (HBV) remains a significant public health concern, having affected over 2 billion people worldwide and leading to approximately 1 million deaths annually despite effective vaccination and therapies (5). Persistent infection with HBV for greater than 6 months is considered Chronic Hepatitis B (CHB). An estimated 12-20% of cases of CHB progress to cirrhosis and 6-15% to hepatocellular carcinoma (3). The main goals of treatment are to avoid such outcomes by achieving suppression of HBV DNA loads, seroconversion of hepatitis B surface antigen (HBsAg) and hepatitis B e antigen (HBeAg), and ultimately seroclearance of HBsAg and HBeAg. The aim of this study was to determine the rate of seroconversion and seroclearance in patients with Chronic Hepatitis B undergoing review in University Hospital Limerick (UHL).

## METHODS

Data was collected retrospectively from electronic medical records and charts of patients with known CHB currently under follow up with the Hepatitis Clinic in UHL (Limerick, Ireland). Information regarding patient age, gender, viral load, hepatitis serology, treatment and duration, and comorbidities was obtained. Seroconversion was defined as the loss of HBsAg/HBeAg for greater than 6 months and HBsAg/HBeAg seroclearance was defined as two consecutive negative HBsAg/HBeAg serum results at least 6 months apart. Viral loads (HBV DNA) were considered high if over the laboratory reference range of 40 IU/mL. Data was analyzed with the help of SPSS version 21.

## RESULTS

72 patients were analyzed. Three patients were excluded due to concomitant viral infections. The mean age was 42.93+10 SD. 66.7% were males and 33.3% were females. All were HBsAg positive. HBeAg was positve in 11.6% and negative in 88.4%. Viral load was raised in 71% and undetectable in 29%. 71% were not on antiviral treatment, while 29% were (21.7% tenofovir, 7.2% entacavir). Average treatment duration was 4 years. In the treatment group, one patient (1.4%) showed seroconversion of HBsAg in response to tenofovir disoproxil fumarate (TDF). HBeAg seroconversion and spontaneous seroconversion in the non-treatment group were not seen.

## DISCUSSION

Inadequately treated CHB increases the risk of transmission and of developing significant complications, including liver cirrhosis and hepatocellular carcinoma. While progression to these long-term sequelae is multifactorial, viral load, delayed seroconversion, and HBV reactivation are thought to have the greatest influence on the risk.

Seroconversion and seroclearance as well as suppression of viral load are therefore the main targets of antiviral treatments like TDF and entacavir seen used in this study. Achieving these targets has been shown to lead to normalization of ALT, decreased inflammation, and a decrease in the development of fibrosis over time.

Unfortunately, only one patient (1.4%) in our treatment group achieved HBsAg seroconversion, likely secondary to a limited number of participants. Seroclearance was not able to be determined as this patient was followed thereafter in a different centre. No HBeAg or spontaneous seroconversion was noted.

Even after seroconversion, some patients can experience reactivation, particularly those on immunosuppressive therapy. This stresses the need for continued monitoring.

## CONCLUSION

This study highlights the importance of adjusting therapy to achieve treatment targets as well as diligent and continued surveillance of patients with Chronic Hepatitis B infection in working to prevent long-term complications of the disease.

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