BACKGROUND: Hepatitis B virus (HBV) DNA detection and quantification are now playing an increasing role in the assessment of disease activity and response to therapy. However, viraemia levels which define various stages of HBV infection have not yet been established. AIM: To define viraemia levels which describe various stages of chronic hepatitis B virus infection. METHODS: In a retrospective study, stored sera samples of chronic hepatitis B virus (CHB) infected patients registered at AIIMS liver clinic, from January 1996 to June 2005 were subjected to competitive, quantitative PCR analysis. RESULTS: The median HBV DNA load was lowest among carriers and highest among patients with chronic hepatitis B [0 (0-8) vs. 7 (0-12) log10 copies/ml, respectively; $p<0.05$]. As compared to chronic hepatitis patients the DNA load was also lower among cirrhotics [7 (0-12) vs. 4.5 (0-8) log10 copies/ml, respectively; $p<0.05$] and hepatocellular cancer patients [7(0-12) vs. 0 (0-8) log10 copies/ml, respectively; $p<0.05$]. Patients with carriers had a DNA load which was significantly lower than e antigen negative CHB [0 (0-8) vs. 6 (0-10) log10 copies/ml; $p<0.05$] or e antigen positive CHB [0 (0-8) vs 8 (0-12) log10 copies/ml; $p<0.05$]. A threshold of 3.5 log10 copies/ml had sensitivity and specificity of 83% and 58% respectively in differentiating carriers from e antigen negative CHB. There was a strong positive correlation of HBV DNA load with inflammatory grade ($R=0.334$; $p=0.0001$), fibrosis stage ($R=0.276$; $p=0.001$) and ALT levels ($R=0.378$; $p=0.0001$). 82% (9/11) of those who lost e antigen had a decline in HBV DNA levels to <5 log10 copies/ml, whereas only 12.5% (1/8) of those who did not lose e antigen had a decline in DNA load below this level. CONCLUSIONS: HBV DNA viraemia levels correlate positively with the inflammatory grade, fibrosis stage and ALT levels. Most patients who loose e antigen have a decline in DNA load to below 5 log10 copies/ml. Further prospective studies employing repeated measurements are required to define a threshold to differentiate between HBV carriers and e antigen negative CHB.