OBJECTIVES: Nearly 350 million people worldwide are chronically infected with hepatitis B virus (HBV). In the United States (US), the incidence of infection was estimated at 240,000 new infections annually between 1988 and 1994. Complications of HBV infection, such as cirrhosis, liver failure and hepatocellular carcinoma, are the cause of significant morbidity and mortality and may have important economic implications. As part of a multinational effort to examine the burden of HBV infection, our objective was to estimate direct medical costs in the US of six health states associated with HBV infection.

METHODS: We used administrative claims data (including medical and pharmacy utilization) from a national database (PharMetrics) to estimate costs for: 1) chronic HBV; 2) compensated cirrhosis; 3) decompensated cirrhosis; 4) liver transplantation; 5) transplant care >12 months following transplant; and 6) hepatocellular carcinoma. Patients with HBV were identified in each health state using diagnostic and procedure codes specific to the health state, and their utilization was tracked during their time in that health state. To estimate costs, we used reimbursed (paid) amounts and adjusted to 2000 US dollars.

RESULTS: Average annual costs for patients in each health state were: chronic HBV = $873; compensated cirrhosis = $305; decompensated cirrhosis = $1,15,102; liver transplant = $126,278; transplant care >12 months following transplant = $15,660; and hepatocellular carcinoma = $9478. Medications contributed the largest proportion of costs in chronic HBV and compensated cirrhosis, while hospitalizations were the largest cost component in the other health states. CONCLUSIONS: Our analysis provides estimates of the annual costs of complications of HBV infection in the US and suggests the costs of certain HBV sequelae are significant. The cost estimates can be used in modeling studies, which estimate the burden of illness of HBV and evaluate the cost-effectiveness of interventions targeted at HBV.

ESTIMATING FUTURE HEPATITIS B VIRUS (HBV) DISEASE BURDEN IN THE UNITED STATES USING A DISEASE SIMULATION MODEL

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OBJECTIVE: Chronic HBV is a serious infection for which few therapeutic options exist. The CDC estimates that 1.25 million Americans are chronically infected. We estimated the burden of disease in the United States from chronic HBV and its complications such as cirrhosis and hepatocellular carcinoma (HCC) using a disease simulation model. METHODS: We analyzed US data from the NHANES III survey to derive HBsAg prevalence estimates for the age groups 20–29, 30–39, 40–49, 50–59, 60+. Using US census data from 1991, we estimated the number of HBsAg carriers in the US in each age group. A Markov model with eight health states (seroconversion; chronic HBV; compensated cirrhosis; decompensated cirrhosis; HCC; transplant year 1; transplant year 2; death) was used to estimate disease burden from 2002–2012. Model simulation started from 1991; all subjects were started from the chronic HBV state; cycle length was one year; subjects could move between health states annually. Transition probabilities were derived from literature. Costs were derived from a claims database analysis (PharMetrics) and literature. RESULTS: We estimated that 653,101 people had chronic HBV infection in 1991. These formed the base population for our analysis. We estimated that from 2002–2012, there will be 133,661 cirrhosis cases; 41,101 HCC cases; 66.53 liver transplants; 133,722 deaths attributable to chronic HBV infection. The total direct medical costs for these cases was estimated at $9.4B over the same time frame. CONCLUSIONS: The results of this analysis shows that HBV infection is a significant burden on the US healthcare system. These results are probably an underestimation of the true burden given that our estimated patient population was half of the CDC estimate and incident cases are not accounted for. The availability of an effective antiviral agent capable of modifying the disease progression would decrease this economic burden to society.

COST-SAVINGS OF AN IV TO PO ACYCLOVIR SWITCH IN A STANDARDIZED HSV PROPHYLAXIS PROTOCOL ON A BMT UNIT

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OBJECTIVES: The objectives of this study are to examine the clinical efficacy of using an oral (PO) acyclovir prophylactic herpes (HSV) protocol before a bone marrow transplant (BMT) versus the intravenous (IV) formulation of acyclovir, as well as the cost-savings that the oral formulation has relative to the intravenous. METHODS: Two retrospective cohorts were examined on the UCSF Medical Center Adult BMT/Leukemia Service. The first cohort consisted of 31 patients on the service for either a BMT or Peripheral Stem Cell Transplant (PSCT) in 1996. These patients were started on an IV acyclovir prophylactic protocol. The second cohort consisted of 41 patients on the same service for either a BMT or PSCT in 2001. These patients were started on an oral acyclovir prophylactic protocol. The two main outcome variables include cost per day of acyclovir treatment/prophylaxis and percentage stay on IV acyclovir. Further analyses conducted include subgroup analysis, sensitivity analysis, principal components analysis, linear regression, and an exploratory analysis. RESULTS: This study found that the oral protocol has similar clinical efficacy (2 infection in the PO group and 0 in the IV group) to the IV formu-