Meeting / Value in Health Info:	ISPOR 17th Annual International Meeting Washington, D.C., USA June, 2012
Code:	PIN66
Disease:	Infection all
Topic:	Research on Methods (RM)
Topic Subcategory:	MS
Title:	CONSTANT VS TIME-DEPENDENT: TWO DIFFERENT APPROACHES TO DETERMINE TRANSITION PROBABILITIES BETWEEN HEALTH STATES IN MODELING THE COURSE OF DISEASE ▫ THE CASE OF HEPATITIS C
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OBJECTIVES: When modeling the course of disease it is crucial to make proper assumptions concerning transition probabilities between health states. Two different approaches may be adopted: constant or time-dependent probabilities (i.e. survival curves). Most of published economic analyses of hepatitis C treatment are based on models with constant probabilities. Using survival curves is more time-consuming and complex but may result in more accurate estimates. Our aim was to compare the impact of both methods on results of chronic hepatitis C modeling.

METHODS: A Markov model was developed to describe hepatitis C patients flow. Time horizon of 50 years was chosen, cycle length was 1 year. Health states distinguished in the model were: fibrosis, compensated cirrhosis (CC), decompensated cirrhosis (DC), hepatocellular carcinoma (HCC), liver transplant (LT) and death. The possible transitions were: fibrosis->CC, CC->DC, CC->HCC, DC->HCC, DC->LT and from each state to death. Transition probabilities between health states were estimated based on clinical trials evaluating the natural course of chronic hepatitis C progression: either by calculating constant yearly rates or by using Weibull curves estimated from reported Kaplan-Meier curves (the same data source for each transition). Time spent in each of health states was compared between those two approaches.

RESULTS: The average time spent by a CC patient in states CC, DC, HCC and LT was 18.3, 1.6, 0.3 and 1.3 years for constant probabilities, and 14.2, 3.2, 1.1 and 1.6 years for survival curves. Average survival was 21.5 and 20.2 years, respectively.

CONCLUSION: Method of calculation of transition probabilities may have a significant impact on results of modeling, which may further influence incremental cost-effectiveness ratios in economic analyses. The decision on the method should be made on the base of nature of events that are being modeled ▫ for some it may be more accurate to apply the survival curves approach.