

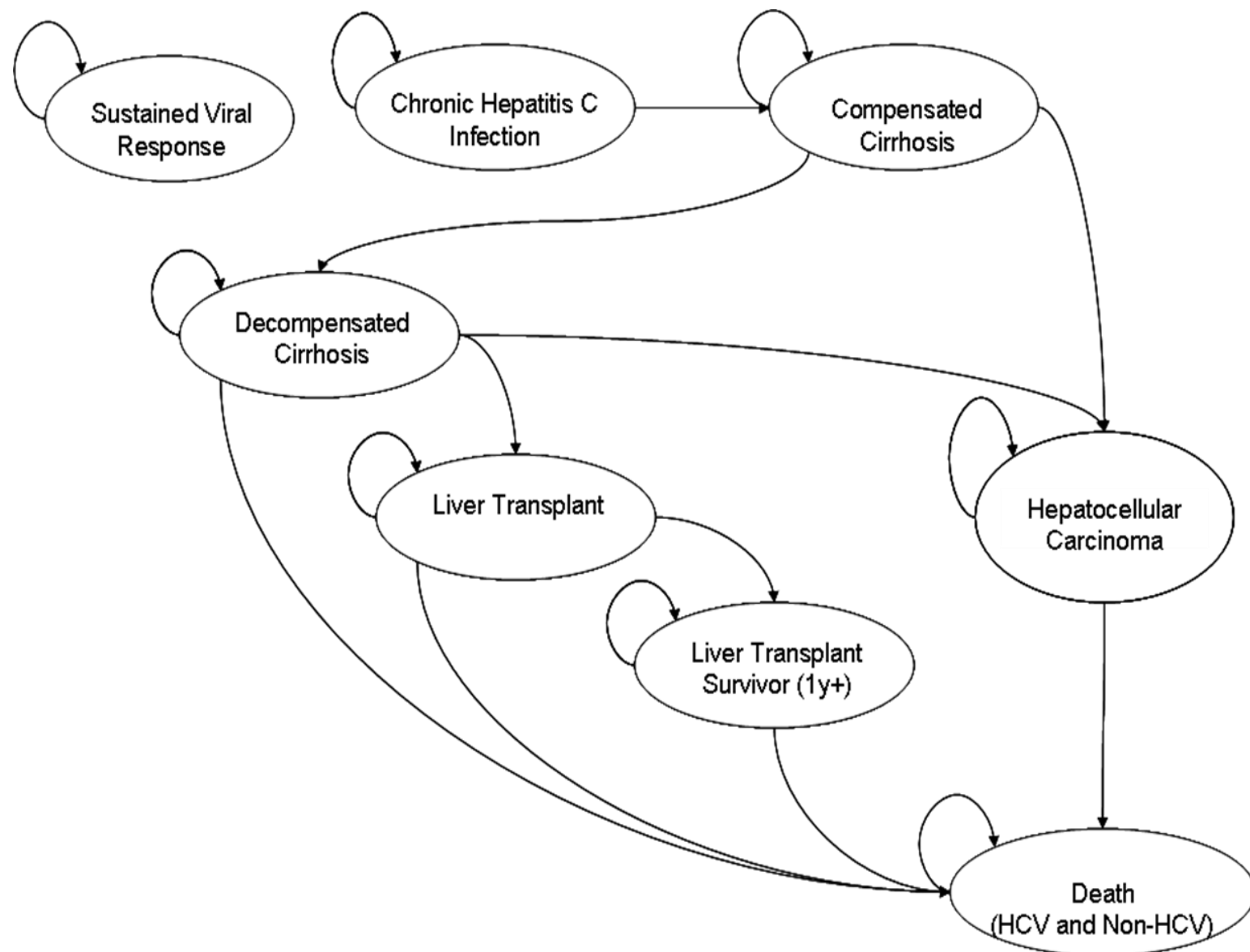
## INTRODUCTION

- Chronic hepatitis C infection (CHC) is estimated to affect over 3 million people in the United States. (1)
- Sustained virologic response (SVR) is the treatment goal, as SVR is associated with lower mortality and morbidity. (2)
- As there are limited data on the value of increasing adherence, in terms of SVR gained and costs; such data may inform decisions about interventions aimed at improving adherence.
- We evaluated the impact of medication adherence on long-term outcomes and costs in patients with genotype 1 chronic hepatitis C (CHC) receiving peginterferon/ribavirin (PEG-RBV).

## METHODS

- We created a cohort Markov model describing the natural history of hepatitis C infection in a population of 1000 treatment-experienced, 50-year old subjects to evaluate transitions between CHC and other health states (Figure 1).
- Using previously published data from the Hepatitis C Antiviral Long-term Treatment against Cirrhosis trial, (3) we modeled four levels of medication adherence: a) >80% PEG-RBV; b) >80% PEG/<80% RBV; c) <80% PEG/>80% RBV; d) <80% PEG-RBV.
- We calculated the difference in total liver-related health care costs between patients in the lowest versus each higher level of adherence following a hypothetical nursing-based intervention program, and performed probabilistic sensitivity analysis to evaluate the uncertainty in our estimates.

Figure 1. Chronic Hepatitis C Infection Markov model



## RESULTS

Table 1. SVR and total discounted cost differences associated with difference levels of medication adherence

Beginning scenario	Medication regimens			
	<80% PEG/RBV	<80% PEG/RBV	<80% PEG/RBV	>80% PEG, <80% RBV
Ending scenario	>80% PEG/RBV	>80% PEG, <80% RBV	<80% PEG, >80% RBV	>80% PEG/RBV
SVR difference	12%	6%	22%	6%
Total cost difference	\$29,850	\$12,820	\$62,690	\$17,030
Savings per percent increase in SVR	\$2,488	\$2,137	\$2,850	\$2,838

Table 2. Discounted life years, quality adjusted life years (QALYs), & treatment QALYs associated with different medication adherences

	Medication regimens			
	<80% PEG/RBV	>80% PEG, <80% RBV	<80% PEG, >80% RBV	>80% PEG/RBV
Life years	17.01	17.16	17.54	17.30
QALYs	13.95	14.16	14.71	14.37
Treatment QALYs	0.578	0.580	0.582	0.540
Overall QALYs	14.53	14.70	15.26	14.91

Table 3. Difference in liver-related events associated with difference levels of medication adherence

Beginning scenario	Medication regimens			
	<80% PEG/RBV	<80% PEG/RBV	<80% PEG/RBV	>80% PEG, <80% RBV
Ending scenario	>80% PEG/RBV	>80% PEG, <80% RBV	<80% PEG, >80% RBV	>80% PEG/RBV
Compensated cirrhosis	99	49	181	50
Decompensated cirrhosis	47	23	86	24
Hepatocellular carcinoma	14	7	27	7
Liver transplant	5	2	9	3

## CONCLUSION

- Over a lifetime horizon, comparing patients of highest versus lowest adherence levels, we found the following reductions in liver-related events: 9.9% compensated cirrhosis, 4.7% decompensated cirrhosis, 1.4% hepatocellular carcinoma, and 0.5% liver transplant.
- Among the scenarios, the difference in total discounted treatment and medication costs ranged from \$12,820 to \$62,690.
- An intervention that could, on average, improve adherence by 20% would lead to cost offsets of \$29,850 and improvement in QALYs of 0.378. The 95% confidence ranges from probabilistic sensitivity analysis were \$18,790-\$35,600 and -0.387 to 0.810 QALYs.
- Limitations to this study:
  - Data availability with respect to medication receipt and SVR; this analysis should be re-performed when data on protease inhibitor-based HCV therapy are available;
  - These findings apply to the base case of a 50 year old, treatment-experienced Caucasian man with chronic genotype 1 HCV.
- This model-based analysis demonstrates that increased patient adherence may result in improved outcomes and reduced costs.
- Future research should focus on the design of targeted interventions to implement these findings.

## REFERENCES

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