

CHRONIC HEPATITIS C VIRUS (HCV) BURDEN IN RHODE ISLAND: MODELLING TREATMENT SCALE-UP AND ELIMINATION

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Background: The objective of this study was to identify the most effective HCV treatment and prevention policies that will lead to a substantial decrease, and eventual elimination, of chronic HCV infection in Rhode Island (RI).

Methods: A modelling framework was constructed in Microsoft Excel, and Monte Carlo and sensitivity analyses were done using Crystal Ball add-in by Oracle. RI state-specific data were used to predict the HCV disease burden under four treatment scenarios: (1) continuation of the current HCV treatment paradigm (approximately 120 patients treated annually, Medicaid reimbursement criteria fibrosis stage $\geq F3$); (2) an immediate scale-up of treatment (to 360 annually), and less restrictive Medicaid reimbursement criteria (fibrosis stage $\geq F2$); (3) an immediate treatment scale-up and no fibrosis stage-specific Medicaid reimbursement criteria ($\geq F0$) in accordance with American Association for the Study of Liver Diseases / Infectious Diseases Society of America recommendations; and (4), an “elimination” scenario (i.e., a continued treatment scale-up needed to achieve $>90\%$ reduction in viremic cases by 2030).

Results: Immediate treatment scale-up with $\geq F2$ and $\geq F0$ fibrosis stage treatment criteria could reduce the number of cirrhotic cases by 25% and 16% respectively, and the number of liver-related deaths by 23% and 14%, respectively in 2030. To achieve a $>90\%$ reduction in viremic cases by 2030, almost 2,000 persons need to be treated annually by 2025. This treatment strategy could reduce cirrhosis cases and liver-related deaths by 72.4% and 67.5%, respectively by 2030.

Conclusion: Substantial increase in HCV treatment availability is required to significantly reduce rates of advanced liver disease and HCV-related death in Rhode Island by the year 2030.

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