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Siddhartha P. Chakrabarty, Department of Mathematics, Indian Institute of Technology Guwahati, Guwahati, Assam 781039, India, and **Hem R Joshi*** (joshi@xavier.edu), 3800 Victory Parkway, Department of Mathematics and CS, Cincinnati, OH 45207-4441. *Optimal Control and its Application to Hepatitis C Treatment.*

We use optimal control techniques to determine an optimal treatment strategy for hepatitis C. We formulate a mathematical model using a system of ordinary differential equations, which describes the interaction of target cells (hepatocytes), infected cells, infectious virions, non-infectious virions and the two drugs, namely, interferon and ribavirin. We solve an optimal control problem with an objective functional that minimizes the viral load as well as the side effects of treatment. We will conclude with some numerical simulations. (Received September 22, 2009)