Poisson vaccination for epidemic control in adaptive social networks LEAH SHAW, College of William and Mary, IRA SCHWARTZ, Naval Research Laboratory — We study an epidemic model for disease spread on an adaptive network modeling avoidance behavior. Individuals are assumed to adapt their social behavior to minimize their risk of disease. Non-infected nodes rewire their connections away from infected nodes to connect instead to other non-infected nodes, and the disease follows an SIS (susceptible-infected-susceptible) dynamics. We add Poisson distributed vaccination of susceptibles. Effects of the vaccination frequency and amplitude are studied in the full system and compared to a mean field theory. Disease extinction rates using vaccination are found for both adaptive and static networks. We show that vaccine control is much more effective in adaptive networks than in static networks due to an interaction between the rates of adaptive network rewiring and vaccine application.

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