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Erica M Rutter* (erica.rutter@asu.edu) and **Yang Kuang**. *Global Dynamics of a Model of Joint Hormone Treatment with Dendritic Cell Vaccine for Prostate Cancer*. Preliminary report.

Advanced prostate cancer is often initially treated by androgen deprivation therapy, a therapy which is unpleasant for the quality of life of the patient. Initially the treatment is effective but gives rise to fatal treatment-resistant cancer. Intermittent androgen deprivation therapy improves the quality of life of the patients by cycling through on and off treatment phases and may delay resistance towards treatment. Immunotherapy alters the bodies immune system to help fight cancer either by suppressing or boosting aspects of the immune system and has proven effective in certain types of cancer. Dendritic cell are antigen-presenting cells, and their vaccines are created to specifically target the patient's own cancer. We propose a model incorporating androgen deprivation therapy (intermittent and continual) in conjunction with dendritic cell vaccine immunotherapy. Simulations are run to determine the sensitivity of cancer growth to dendritic cell vaccine therapy administration schedule. We consider the limiting case where dendritic cells are administered continuously intravenously and perform analysis on the full model and the limiting cases of the model to determine necessary conditions for global stability of cancer eradication. (Received August 15, 2015)