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Title: Evaluating the efficacies of MTD and metronomic chemotherapies via a mathematical model

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Abstract: A mathematical model based on partial differential equations is considered to understand tumor development and its response to chemotherapy treatments. We evaluate the efficacies of two chemotherapeutic protocols, Maximum Tolerated Dose (MTD) and metronomic, as well as two methods of drug delivery (density-dependent and uniform). The results indicate that the metronomic protocol is more effective in prolonging a patients life than the MTD protocol. Furthermore, uniform drug delivery combined with the metronomic protocol promotes the greatest tumor remission over the length of the treatment. However, if failed, metronomic therapy with uniform drug delivery leads to a faster regrowth of a non-eradicated tumor, thus engendering a clinically relevant dilemma.