Prediction and Optimization of Chemotherapy for Patients with Acute Myeloid Leukemia

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Acute Myeloid Leukemia (AML) has 5% overall 5-year survival in patients over 65 years, due to clinical vulnerabilities of the elderly and biological heterogeneity of the disease derived from antecedent hematological disorders. Current protocols for AML treatment dependent on the clinician's experience and consider a small number of patient- and leukemia-specific parameters. New diagnostic tools enabling patient-specific mutation profiling, and cell cycle analysis (G_0, G_1, S, G_2 and M phases) with concomitant measurement of apoptosis, are paving the way in advancing precision medicine for the development of personalized treatments. Herein, a novel dynamic modelling and optimisation framework that uses patient- and leukaemia-specific data to predict treatment outcomes is presented, which could be used for personalized-optimization of drug selection, schedule and choice of treatment regimen for patients with AML.