FOLFIRINOX in Pancreatic Cancer Treatment: Modelling and Simulation for Drug Regimen Optimization

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à l’invitation de la professeure Amélie Marsot
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FOLFIRINOX is currently the best therapeutic option for pancreatic cancer but efficacy is hampered by dose-limiting toxicities. We collected toxicity and efficacy data in 75 patients with pancreatic cancer treated by FOLFIRINOX from 3 centers in Provence (France). PK models were built for 5Fluoro-Uracile (5FU), irinotecan and oxaliplatin based on previously published population PK models. Neutrophil counts were described using a Friberg maturation model. Effect of Granulocyte-Colony Stimulating Factor, 5FU and irinotecan active metabolite SN38 PK on neutrophil counts was added. Categorical adverse events will be modelled based on Hidden Markov chains to identify alternate FOLFIRINOX protocols minimizing their occurrence probabilities. Finally, an optimized FOLFIRINOX protocol reducing neutropenia, diarrhea and neuropathy while maintaining efficacy will be proposed and tested in a clinical setting.