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Causal Inference Program Opening Workshop
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SPEAKER TITLES/ABSTRACTS

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"When and How to Treat Patients?"

Patients that undergo kidney transplantation are at risk for a number of complications and graft rejection after surgery, which could lead to death. In order to prevent graft rejection, immuno-suppressive therapy such as tacrolimus is administered to patients post-surgery. The patients are monitored over time with repeated follow-up records (e.g., tacrolimus blood levels, creatinine levels, BMI) after transplantation and the dosage levels of the immunosuppresive drugs at each visitation can be adjusted by the clinician. Based on patients' baseline information and the followup data, We develop a statistical joint modeling framework to construct an optimal longitudinal treatment strategy for each individual patient by combining a longitudinal model for patients' creatinine levels, a survival model with the endpoint being patient's death or graft failure, and a marked point process for clinical decisions (how often the patient is instructed to followup, and drug dosage adjustments). Our method shows promising performance on a real kidney transplantation dataset, and outperforms alternatives on synthetic datasets.