Dr. Krzysztof Kiryluk

Abstract

Our project brings together an experienced multidisciplinary team of clinical and basic scientist investigators at Columbia University Medical Center with expertise in the fields of genetics, biomarkers, pathophysiology, histopathology, renal biopsies, and therapy for kidney diseases to meet the aims of the Kidney Precision Medicine Project (KPMP) Recruitment Site for acute kidney injury (AKI). Our primary objective in establishing this site is to apply precision medicine techniques to patient biospecimens, including renal biopsies, and longitudinal clinical data to understand the etiology of kidney damage and determine critical pathways that can be targeted for therapy. The KPMP will occur in two phases: the UG3 exploratory phase and the UH3 expansion phase. Leveraging our existing inpatient nephrology consult services, we will create a multiethnic cohort (including >50% enrollment of Latino and/or African-American subjects) of at least 200 patients with AKI over five years. In the exploratory phase of the project, we will enroll at least 50 subjects over two years and will standardize the collection of biospecimens from all study participants including blood, saliva, urine, stool,and renal biopsy samples collected specifically for research purposes. The biospecimens will be pre-processed for genetic, genomic, biomarker, and microbiome studies before the material is transferred to the KPMP Central Hub. To track patient progress and outcomes, a longitudinal study protocol will be used consisting of “dynamic” follow-up visits through electronic health records and yearly in-person visits. In addition, we will share all extracted electronic health record data, survey data, and longitudinal clinical data from follow-up visits from our participants with the larger KPMP initiative for collaborative purposes. In the expansion phase, we will increase the cohort size by enrolling an additional 150 patients over three years and use KPMP consortium-wide established protocols from the exploratory phase for biospecimen collection and longitudinal clinical data collection. We will perform proof-of-concept studies with the longitudinal cohort of 200 Columbia patients with AKI to determine a standard set of outcomes based on risk factors, known serum biomarkers, and genomic data. Lastly, we will work with local kidney foundation chapters and community engagement experts to ensure that the aims of the national KPMP are shared with the larger community so that participants understand the importance of this initiative and the long-term benefits of continued study involvement. We expect that this novel, tissue-based, mechanism-centered approach will challenge the traditional methods for diagnosing and treating AKI and will contribute to the overall goals of the national KPMP.