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Analytic Considerations for Repeated Measures of eGFR in Cohort Studies of CKD

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Abstract

Repeated measures of various biomarkers provide opportunities for us to enhance understanding of many important clinical aspects of CKD, including patterns of disease progression, rates of kidney function decline under different risk factors, and the degree of heterogeneity in disease manifestations across patients. However, because of unique features, such as correlations across visits and time dependency, these data must be appropriately handled using longitudinal data analysis methods. We provide a general overview of the characteristics of data collected in cohort studies and compare appropriate statistical methods for the analysis of longitudinal exposures and outcomes. We use examples from the Chronic Renal Insufficiency Cohort Study to illustrate these methods. More specifically, we model longitudinal kidney outcomes over annual clinical visits and assess the association with both baseline and longitudinal risk factors.

CKD | longitudinal data | repeated measures | GEE | mixed effects model | correlation structures | Biomarkers | Cohort Studies | Disease Progression | GFR | Humans | kidney | Renal Insufficiency | Chronic | risk factors

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