中文題目：隨機尿蛋白定量與 24 小時尿蛋白定量的良好相關性：以大型慢性腎臟病病人族群所發展之 24 小時尿蛋白預估公式

英文題目：Good correlation between random and 24h urine protein: derivation and validation of an estimated 24h urine protein equation in large CKD cohort

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**Background:** Daily urine protein (UP) loss is a cumbersome but important measurement to guide diagnosis and treatment of renal disease. Spot urine estimate of urine protein-creatinine ratio (UPCR) has been applied to estimate daily proteinuria for decades. However, the correlations between spot and 24h estimates remain controversial. This study is aimed to investigate the correlation between spot UPCR, UACR and 24hUP excretion with different severity of CKD in a large CKD cohort.

**Methods:** Simultaneous collection of 24h and spot urine were performed from 1,039 stable CKD patients (derivation cohort) for measurement of urine TP, albumin, and creatinine. Correlation between spot and 24hTP was assessed. Equation to predict 24hTP was developed from linear regression model by using spot UPCR and then validated in 204 unique cases (validation cohort).

**Results:** From all patients, correlation coefficients between UPCR and 24hUP are larger than 0.80, except for CKD stage 3, (r=0.750). Prediction equation was derived as: 24hUP = (gender * 0.231) - (Age * 0.009) + (body weight * 0.008) + (UPCR * 0.918) + (CKD stage coefficient c) + 0.030. Correlation coefficient between measured and predicted 24hUP among derivation group and validation group is 0.839 and 0.929, respectively. Bland-Altman analysis of measured and predicted 24hUP showed good agreement with proteinuria below 4g/day in both derivation group and

validation group. Using this equation, spot UPCR and UACR can accurately predict 24hUP values above proteinuria thresholds of 0.3g (UACR) and 1.0g (UPCR). The area under receiver operating curve for prediction was 0.94 and 0.98, respectively, for these thresholds.

**Conclusion:** Morning spot UPCR can accurately predict 24hTP in patients with daily proteinuria below 4g. The development of a simple equation may facilitate clinical practice for estimation of daily proteinuria. The exact role of this prediction equation in long term patient outcome remains to be elucidated.

**Keywords:** urine protein-creatinine ratio, 24-hour urine protein excretion, proteinuria.