00503 Validation of the Kidney Failure Risk Equation in Primary Care Clinics in Southeast Asia

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Aims: Patients with chronic kidney disease (CKD) are at high risk of progression to end-stage kidney disease (ESKD). The Kidney Failure Risk Equation (KRFE) was developed to accurately predict the progression of CKD to ESKD. However, it has not been validated in the primary care clinic settings in Asia. Thus, we aimed to validate the predictive utility of KFRE for ESKD risk, and compare it with eGFR alone in Singapore polyclinics.

Methodology: Electronic health records were extracted from 9 polyclinics on patients aged 40 years or older visiting clinics during Jan 2010 to Dec 2012 with at least two measurements of serum creatinine or proteinuria. All patients with CKD-EPI estimated glomerular filtration rate (eGFR) <60 mL/min/1.73m2 and albumin-to-creatinine ratio (ACR) had KFRE evaluated using the 4-variable equation (age, sex, eGFR, ACR). ESKD was determined by linkage with Singapore Renal Registry. Area under the operating characteristics curves (AUC) was used to calculate the predictive utility for the 5-year risk of ESKD with KFRE versus eGFR alone.

Result: KFRE was evaluated among 17,271 participants, of whom 49% were men, 80% were Chinese, 12% were Indian and 4% were Malays. After 5 years, 491 patients developed ESKD. KFRE had better discrimination than eGFR alone, and the respective AUC (95% CI) was 0.93 (0.92-0.94) and 0.89 (0.88-0.91). The excellent predictive utility of KFRE persisted in all ethnic groups. Using eGFR <45 mL/min/1.73m2 as threshold, 7,813 CKD patients (45.2%) would meet referral criteria for nephrologist, while the number substantially decreased to 2,534 (14.7%) when using the optimal KFRE threshold ≥1.9%.

Conclusion: The KFRE showed excellent predictive utility, which was better than eGFR alone for ESKD risk in this multi-ethnic population. The risk threshold 1.9% may aid efficient clinical decision making in Singapore, and implementation needs to be evaluated locally and possibly in other Asian countries.