## Combination of Albuminuria and Kidney Function Predicts CKD Risk

The combination of increased urinary albumin-creatinine ratio (UACR) and decreased estimated glomerular filtration rate (eGFR) is strongly associated with an increased risk of advanced chronic kidney disease (CKD), reports a UK population-based study in the *American Journal of Kidney Diseases*.

The analysis included more than 91,319 UK primary care patients, identified from the Clinical Practice Research Datalink between 2000 and 2015. Mean eGFR was 72.6 mL/min/1.73 $m^2$ and median UACR 9.7 mg/g; 77.7% of patients had diabetes.

Patterns of change in UACR and eGFR—a 30% or greater increase, stable, or a 30% or greater decrease—were analyzed over a 3-year exposure window. The main outcome of interest was the occurrence of advanced CKD, defined as a sustained eGFR of less than 30 mL/min/1.73 $m^2$. Kidney failure, cardiovascular disease, and all-cause mortality were analyzed as secondary outcomes. Greater increases in UACR and greater decreases in eGFR were both associated with older age, history of cardiovascular disease, and use of renin-angiotensin system blockers or other antihypertensive drugs.

Risk of advanced CKD was higher in patients with a 30% or greater increase in UACR, hazard ratio (HR) 1.78, and in those with a 30% or greater decrease in eGFR, HR 7.53 (compared to stable values). For the combination of increased UACR and decreased eGFR, the HR was 15.15 (compared to stable values for both). For kidney failure, the associated HR was 16.68. The combination improved discrimination of advanced CKD better than either measure alone; the magnitude of improvement was greater for eGFR than for UACR.

Changes in eGFR and UACR have been evaluated separately as alternative outcomes in kidney trials. However, little is known about their combined value as a surrogate for progression to kidney failure.

This large population-based study finds that increased UACR plus decreased eGFR is strongly associated with the risk of advanced CKD as well as kidney failure [Neuen BL, et al. Changes in GFR and albuminuria in routine clinical practice and the risk of kidney disease progression. *Am J Kidney Dis*, published online ahead of print April 22, 2021. doi: 10.1053/j.ajkd.2021.02.335; https://www.ajkd.org/article/S0272-6386(21)00562-X/fulltext].



## Comorbid Kidney Disease Increases Risk of Severe COVID-19

Patients with comorbid kidney disease and those on continuous renal replacement therapy (CRRT) are at increased risk of severe COVID-19, concludes a meta-analysis in *Clinical and Experimental Medicine*.

A systematic review of the literature was performed to identify studies providing information on comorbid chronic kidney disease (CKD), acute kidney injury (AKI), and CRRT and outcomes of hospitalized patients with laboratory-confirmed COVID-19. The meta-analysis included data from 29 observational studies including a total of 15,017 COVID-19 patients. The studies were published through August 2020, with 20 studies performed in China and 6 in the United States. Severe COVID-19 was defined in terms of intensive care unit (ICU) admission, oxygen saturation less than 90%, invasive mechanical ventilation, and in-hospital death.

Overall, 11.6% of patients had prevalent AKI, 9.7% had CKD, and 2.58% were receiving CRRT. On analysis of 13,278 patients from 22 studies, comorbid CKD was associated with increased odds of severe COVID-19: pooled odds ratio (OR) 1.7.

Based on 16 studies, including 3693 patients, comorbid CKD was associated with increased odds of severe COVID-19: OR 8.28. Meta-analysis of 3946 patients from 17 studies showed a significant association between CRRT and severe COVID-19: OR 16.90. Although pandemic COVID-19 primarily affects the lungs, kidney manifestations may also occur through unknown but likely multifactorial mechanisms. This meta-analysis of data available through August 2020 shows that AKI, CKD, and CRRT use are common among hospitalized patients with COVID-19 and are also associated with increased odds of severe disease [Singh J, et al. Kidney disease and COVID-19 disease severity—systematic review and meta-analysis. *Clin Exp Med*, published online ahead of print April 23, 2021. doi: 10.1007/s10238-021-00715-x; https://link.springer.com/article/10.1007/s10238-021-00715-x].