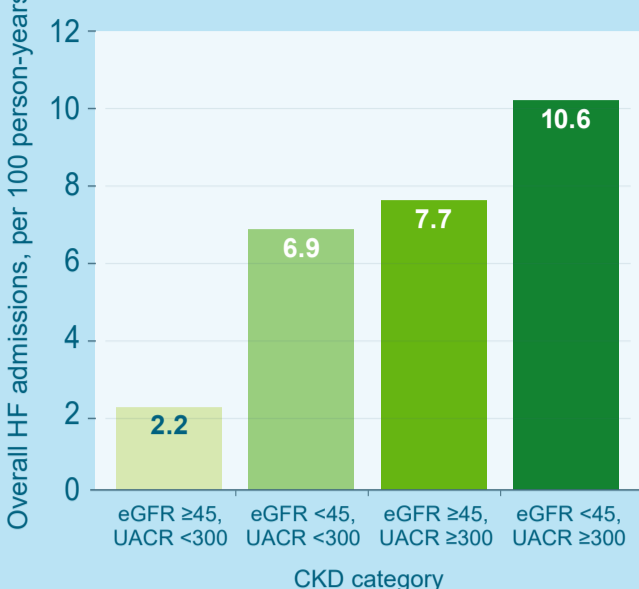


# Interplay and Consequences of HEART FAILURE AND CHRONIC KIDNEY DISEASE OUTCOMES

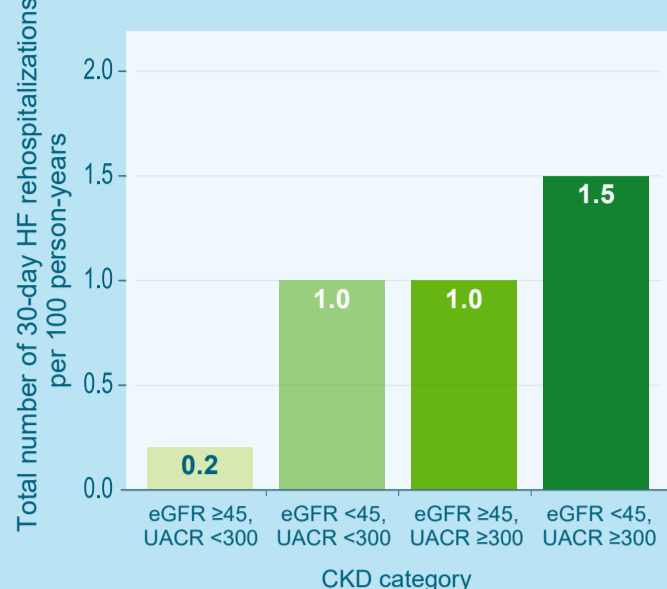


The number of hospital admissions and rehospitalizations due to heart failure increases with worsening CKD<sup>1,2</sup>

Rates of HF Admissions<sup>1,a</sup>



Rates of 30-day HF Rehospitalizations<sup>1,a</sup>



20.6%

Overall rate of 30-day re-admission for HF<sup>1</sup>

Patients with CKD hospitalized with heart failure have a greater risk of CKD progression<sup>1,a</sup>

1

or more hospitalizations

within the first 2 years of follow-up

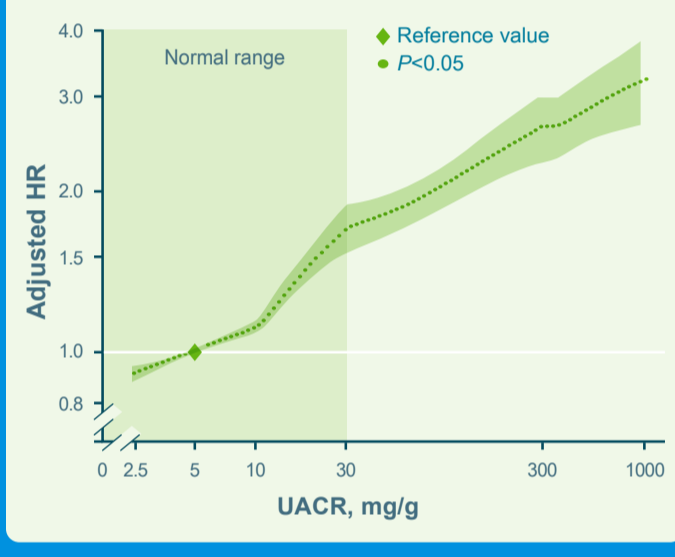
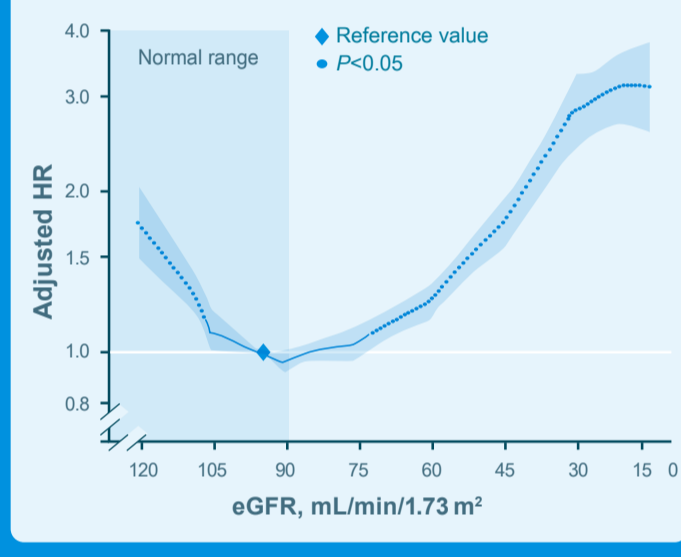
~2x the risk

OF CKD PROGRESSION

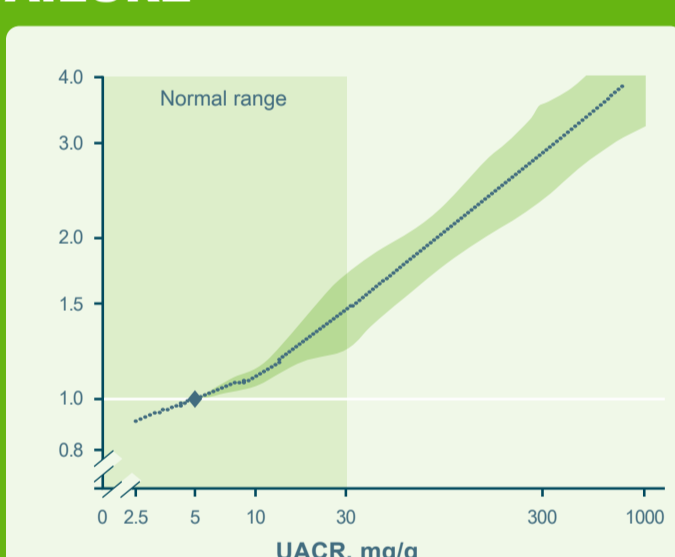
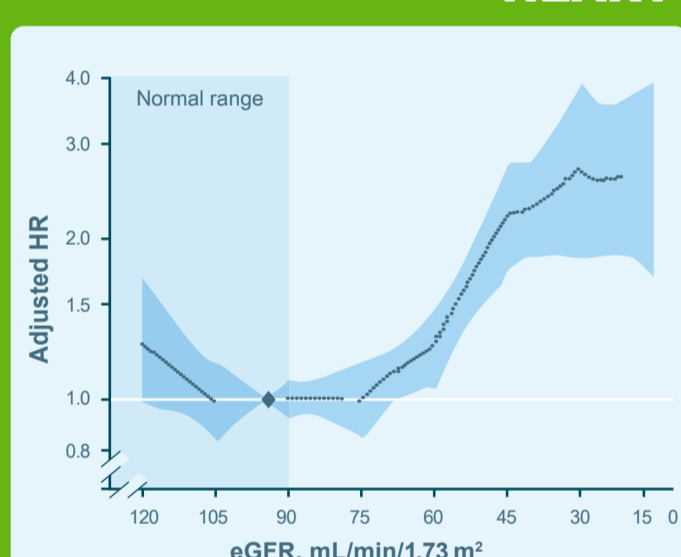
As CKD progresses, THE RISK OF CV MORTALITY AND HEART FAILURE IN PATIENTS INCREASES<sup>3</sup>

CV Mortality and HF According to eGFR and UACR<sup>3,b,c</sup>

## CV MORTALITY



## HEART FAILURE



Figures reprinted with permission from Elsevier: Matsushita K, et al. *Lancet Diabetes Endocrinol.* 2015;3(7):514-525.



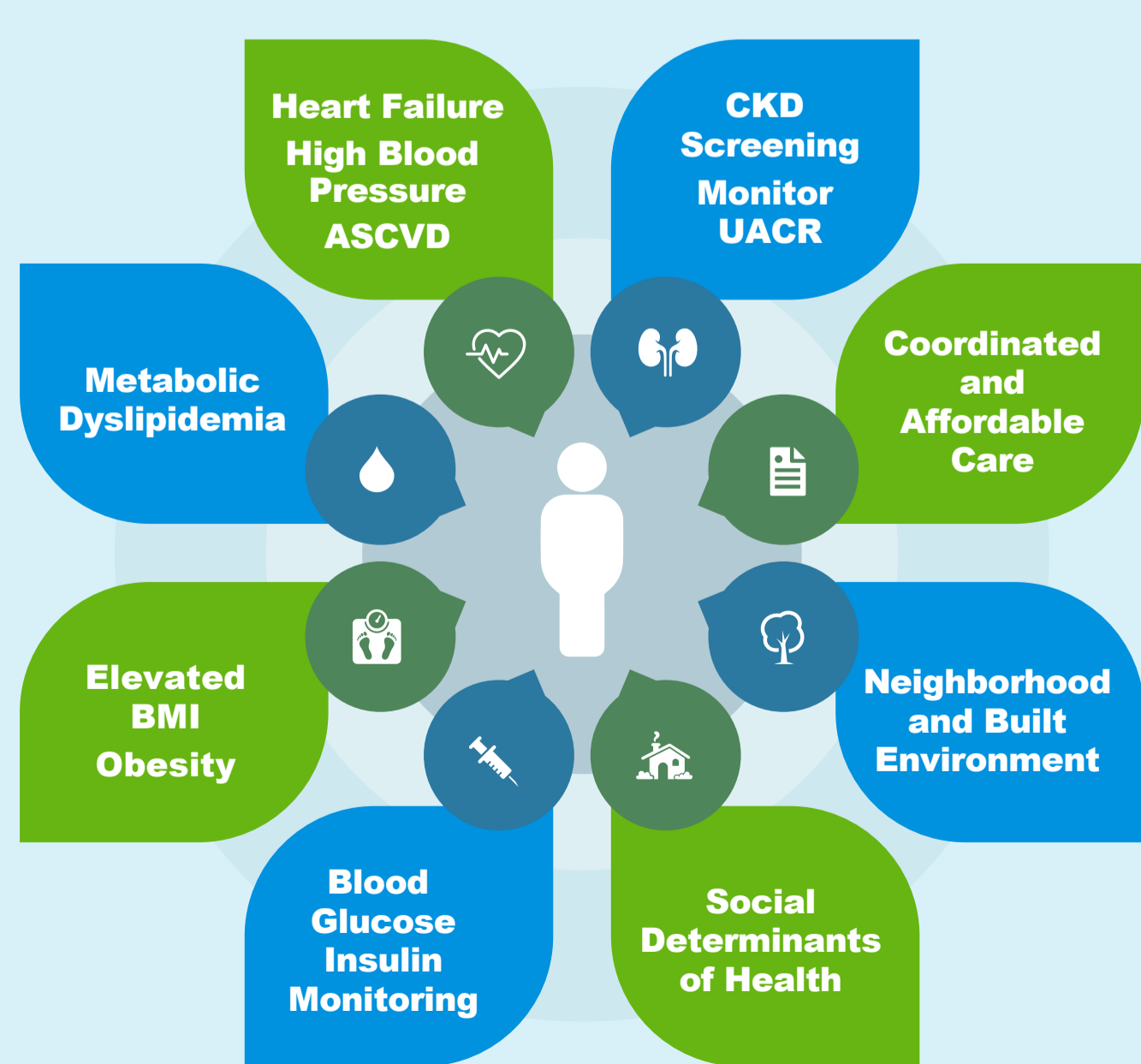
eGFR and albuminuria are independent predictors of CV mortality and heart failure outcomes in CKD, regardless of traditional risk factors<sup>3,d</sup>

Cardiovascular–Kidney–Metabolic Health: A PRESIDENTIAL ADVISORY FROM THE AMERICAN HEART ASSOCIATION



Both measurements are needed to characterize not only CKD, but also CVD risk (particularly heart failure)<sup>4</sup>

The Presidential Advisory focuses on multicomponent patient-centered implementation to address CKM health<sup>5</sup>



<sup>a</sup>Data from a study of 3939 individuals with mild to severe CKD enrolled in the Chronic Renal Insufficiency Cohort (CRIC) study (148 participants were excluded due to missing UACR at the baseline data visit, resulting in a final analytical cohort of 3791 participants).<sup>1</sup>

<sup>b</sup>Data from a meta-analysis of individual-level data for 637,315 patients (629,776 patients for CV mortality and 105,127 for HF in the eGFR analysis; 120,148 patients for CV mortality and 55,855 for HF in the UACR analysis) without history of CVD from 24 cohorts included in the Chronic Kidney Disease Prognosis Consortium.<sup>3</sup>

<sup>c</sup>Adjustments were for age, sex, race/ethnicity, smoking, systolic blood pressure, antihypertensive drugs, diabetes, total and high-density lipoprotein cholesterol concentrations, and albuminuria (UACR or dipstick) or eGFR, as appropriate.<sup>3</sup>

<sup>d</sup>Traditional risk factors were defined as race/ethnicity and those in the Framingham prediction model for general CV risk: age, sex, systolic blood pressure, antihypertensive drug use, total and high-density lipoprotein cholesterol, smoking status, and diabetes.<sup>3</sup>

ASCVD, atherosclerotic cardiovascular disease; BMI, body mass index; CKD, chronic kidney disease; CKM, cardiovascular–kidney–metabolic; CV, cardiovascular; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; HF, heart failure; HR, hazard ratio; UACR, urine albumin-to-creatinine ratio.

1. Bansal N, et al. *J Am Coll Cardiol.* 2019;73(21):2691-2700. 2. Bansal N, et al. Supplement. *J Am Coll Cardiol.* 2019;73(21):2691-2700. 3. Matsushita K, et al. *Lancet Diabetes Endocrinol.* 2015;3(7):514-525. 4. Ndumele CE, et al. *Circulation.* 2023;148(20):1606-1635. 5. American Heart Association. Cardiovascular–kidney–metabolic health: A 2023 presidential advisory from the AHA. Presented at AHA Scientific Sessions 2023, November 11-13, 2023.