Call to action from AHA & KDIGO for CKD:

FIND IT EARLY, TREAT IT EARLY

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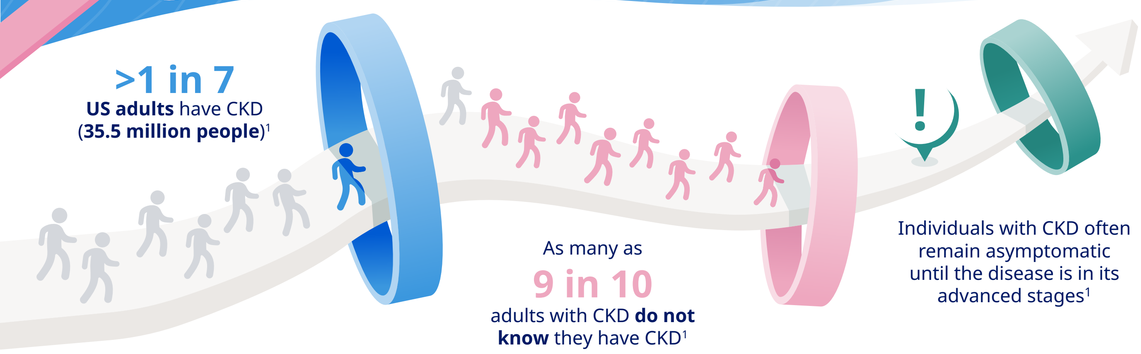
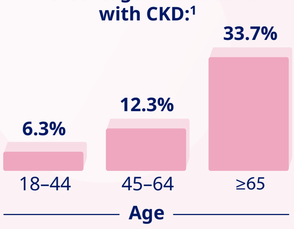
>1 in 7
US adults have CKD
(**35.5 million people**)[1]



As many as
9 in 10
adults with CKD **do not know** they have CKD[1]

Individuals with CKD often remain asymptomatic until the disease is in its advanced stages[1]

Percentage of US adults with CKD:[1]



Annual Medicare cost of CKD[3]

Adverse SDOH are associated with higher incident obesity and diabetes, subsequent complications of these conditions, greater disability, and **worsened outcomes**[4]

Top comorbidities of CKD are also critical risk factors contributing to its development[5-7]

In the US, CKD affects:

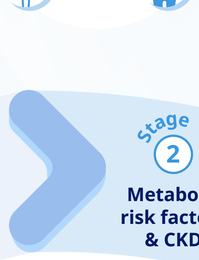
~1 in 3 adults with diabetes[1,2]

~1 in 5 adults with HTN[1,2]

~1 in 3 adults with CVD[1,2]

~1 in 6 adults with obesity[7,8]

CKM syndrome is a **systemic disorder** characterised by pathophysiological interactions among metabolic risk factors, CKD and the cardiovascular system, leading to **multiorgan dysfunction** and a high rate of **adverse CV outcomes**
- AHA[4]



Systemic **inflammation** is a central process in this progression and may be a contributing factor to morbidity and mortality[9-11]

Compared to those with normal kidney function, patients with advanced CKD are at greater risk for:[12*]

7.1x all-cause mortality
7.7x HF
5.0x MI

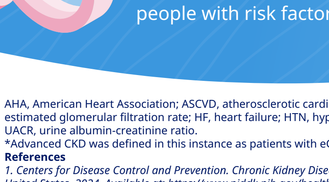
Stages of CKM [4]

- **Stage 0** — No risk factors
- **Stage 1** — Excess/ Dysfunctional adipose tissue
- **Stage 2** — Metabolic risk factors & CKD
- **Stage 3** — Subclinical CVD (ASCVD, HF) in CKM syndrome
- **Stage 4** — Clinical CVD in CKM syndrome

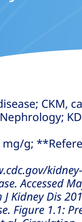
SDOH have a prominent impact on CKM health, as effective management relies heavily on patient access to care (screening, diagnosis, and intervention opportunities) and CV health behaviors (e.g. physical activity, nutrition)[4,13-15]

The heightened risk for CVD begins at the earliest stages of kidney disease, the latter of which is most easily recognized by the presence of albuminuria. **There is significant underuse of UACR measurement in concert with eGFR to fully characterize CKD-associated risk**[11]

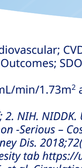
Early treatment delays kidney failure by multiple years[16-18]



UACR and eGFR are independent predictors of CV mortality and should be used to manage CKD-associated risk[19]



~3x risk for CV mortality at eGFR 15 and/or UACR 1000**



~2x risk for CV mortality at eGFR 45 and/or UACR 30**

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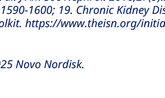
CKD screening, coupled with risk stratification and treatment should be implemented immediately for people with risk factors for CKD[12,20]



ISN toolkit + algorithm for early CKD identification and intervention in primary care[21]

AHA, American Heart Association; ASCVD, atherosclerotic cardiovascular disease; CKD, chronic kidney disease; CKM, cardiovascular-kidney-metabolic; CV, cardiovascular; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; HF, heart failure; HTN, hypertension; ISN, International Society of Nephrology; KDIGO, Kidney Disease Improving Global Outcomes; SDOH, social determinants of health; UACR, urine albumin-creatinine ratio.
*Advanced CKD was defined in this instance as patients with eGFR <30 mL/min/1.73m^2 and UACR >300 mg/g; **Reference group was patients with eGFR 95 mL/min/1.73m^2 and UACR 5 mg/g.

References
1. Centers for Disease Control and Prevention. Chronic Kidney Disease in the United States, 2023. https://www.cdc.gov/kidney-disease/media/pdfs/CKD-Factsheet-H.pdf; 2. NIH. NIDDK. USRDS. Kidney Disease Statistics for the United States. 2024. Available at: https://www.niddk.nih.gov/health-information/health-statistics/kidney-disease. Accessed May 2025; 3. Chronic Kidney Disease: Common -Serious – Costly, https://www.cdc.gov/kidney-disease/ckd-facts/index.html; 4. Ndumele CE, et al. Circulation. 2023;148(20):1606-35; 5. Umanath K et al. Am J Kidney Dis 2018;71:884–895; 6. House AA et al. Am J Kidney Dis. 2018;72(2):284-295; 7. Stenvinkel P et al. J Am Soc Nephrol. 2013;24(11):1727-1736; 8. NIH. NIDDK. USRDS. 2024 Annual Data Report: Chronic Kidney Disease. Figure 1.1: Prevalence of CKD in U.S. Adults, see the Obesity tab https://usrds-adr.niddk.nih.gov/2024/chronic-kidney-disease/1-ckd-in-the-general-population; 9. Tinti F, et al. Life (Basel). 2021;11(5):419; 10. Jankowski J, et al. Circulation. 2021;143(11):1157-1172; 11. Ndumele CE, et al. Circulation. 2023;148(20):1636-1664; 12. KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int. 2024;105(45):S117-S314; 13. Tangri N, et al. Adv Ther. 2023;40(6):2869-2885; 14. Hussien H, Apetrii M, Covic A. Expert Rev Pharmacoecon Outcomes Res. 2021;21(1):43-54; 15. Norton JM, et al. J Am Soc Nephrol. 2016;27(9):2576-95; 16. Fioretto P, et al. Nat Rev Nephrol. 2022;18(2):78-79; 17. Brenner BM et al. N Engl J Med 2001; 345(12):861–869; 18. Brosius FC, et al. Clin J Am Soc Nephrol. 2021;16(10):1590-1600; 19. Chronic Kidney Disease Prognosis Consortium; Matsushita K, et al. Lancet. 2010;375(9731):2073-81; 20. Shlipak MG, et al. Kidney Int. 2021;99(1):34-47; 21. ISN-KDIGO CKD Early identification & intervention toolkit. https://www.theisn.org/initiatives/toolkits/ckd-early-screening-intervention/ #PrimaryCare22.