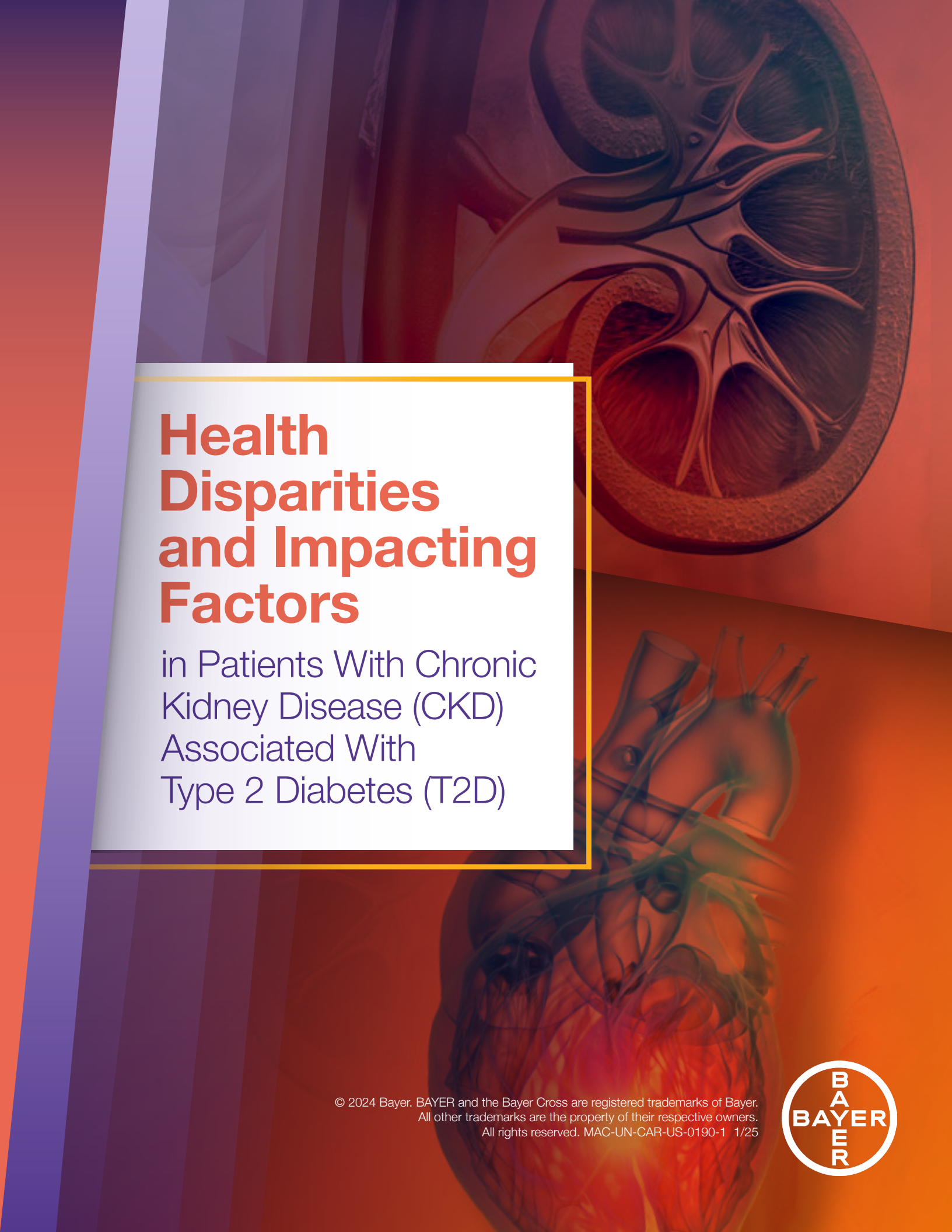

Health Disparities and Impacting Factors

in Patients With Chronic Kidney Disease (CKD) Associated With Type 2 Diabetes (T2D)

BAYER

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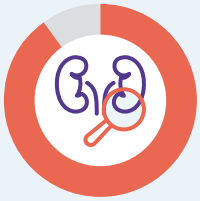
CKD, chronic kidney disease; SDoH, social determinants of health; T2D, type 2 diabetes.

Chronic kidney disease remains underdiagnosed and undertested

~36.4 million people in the United States have T2D, and at least **40%** of those patients also have CKD[1,2]



~90% of patients with diabetes and CKD are unaware of their kidney disease[3]

ADA, KDIGO, ESC, and AACE guidelines **recommend uACR and eGFR testing at least annually** for all patients with T2D[4-7]

A 2021 published study reported **80.0%** of at-risk patients with CKD **did not receive guidelines-based testing**.

Only 21.0% of all at-risk patients had at least 1 uACR test, compared with 89.6% of patients who had an eGFR test[8]

AACE, American Association of Clinical Endocrinology; ADA, American Diabetes Association; CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; ESC, European Society of Cardiology; KDIGO, Kidney Disease Improving Global Outcomes; T2D, type 2 diabetes; uACR, urine albumin-creatinine ratio.

References: 1. American Diabetes Association. Accessed July 12, 2024. https://diabetes.org/about-diabetes/statistics/about-diabetes **2.** Bailey RA et al. *BMC Res Notes*. 2014;7:415. **3.** United States Renal Data System. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. Accessed July 15, 2024. https://usrds-adr.niddk.nih.gov/2020/chronic-kidney-disease/1-ckd-in-the-general-population **4.** American Diabetes Association Professional Practice Committee. *Diabetes Care*. 2024;47(suppl 1):S219-S230. **5.** de Boer IH et al. *Kidney Int.* 2022;102(5):974-989. **6.** Marx N et al. *Eur Heart J.* 2023;44(39):4043-4140. **7.** Blonde L et al. *Endocr Pract.* 2022;28(10):923-1049. **8.** Alfego D et al. *Diabetes Care.* 2021;44(9):2025-2032.

Though gaps in care exist for all patients with CKD associated with T2D, minority groups are disproportionately impacted

Increased Comorbidities

Black or African Americans have much **higher rates of high blood pressure, diabetes, and additional comorbidities** that increase the risk for kidney disease[1]

Higher Prevalence

According to the Centers for Disease Control and Prevention, **CKD is more common in non-Hispanic Blacks (16.3%) and Hispanics (13.6%)** than in non-Hispanic Whites (12.7%) or non-Hispanic Asians (12.9%)[2]

Lower Screening Rates

Lower KED fulfillment of recommended testing was found among Black or African American patients (30%-36%) and groups that have been economically marginalized (26%-35%)[3]

Worse Outcomes

Compared with White Americans:

- Hispanics or Latinos are **1.3 times more likely to have kidney failure**[1]
- Black or African Americans are **almost 4 times more likely** to have kidney failure[1]
- The mortality rate over 4 years from kidney disease among Black individuals is **more than twice that among White individuals** (28.2% vs 12.4%)[4]

CKD, chronic kidney disease; KED, Kidney Health Evaluation for Patients With Diabetes; T2D, type 2 diabetes.

References: 1. National Kidney Foundation. Accessed July 12, 2024. https://www.kidney.org/advocacy/legislative-priorities/health-disparities **2.** Centers for Disease Control and Prevention. March 4, 2021. Accessed October 17, 2023. https://nccd.cdc.gov/CKD/Documents/Chronic-Kidney-Disease-in-the-US-2021-h.pdf **3.** Ferrè S et al. *Mayo Clin Proc Innov Qual Outcomes*. 2023;7(5):382-391. **4.** Benjamins MR et al. *J Gen Intern Med.* 2022;37(6):1351-1358.

Social determinants of health (SDoH) can make it harder for patients to be healthy and get the medical care and support they need[1]

What are SDoH?

- SDoH are nonmedical factors that influence health outcomes, such as conditions in which people are born, grow, work, live, and age. SDoH can be grouped into 5 domains[2]:

Economic Stability*

Education Access and Quality†

Healthcare and Quality‡

Neighborhood and Built Environment§

Social and Community Context‖

- These factors include economic policies, development agendas, social norms, social policies, racism, climate change, and political structures[2]

The risk of developing CKD may be higher in some people due to SDoH caused by race-based economic and political decisions that have systemically been set in place[1]

*Economic stability is the connection between people's financial resources and their health. This includes income/employment, socioeconomic status/poverty level, food security, and housing stability.[3]
†Education access and quality refers to a person's ability to participate in education programs.[4]
‡Healthcare and quality refers to access to healthcare and primary care, health insurance, and health literacy.[5]
§Neighborhood and built environment refers to quality of housing, access to transportation, and neighborhood crime and violence.[6]
‖Social and community context refers to the cohesion and participation within a community, conditions in a workplace, and incarceration.[7]

CKD, chronic kidney disease; T2D, type 2 diabetes.

References: 1. National Kidney Foundation. Updated January 2, 2023. Accessed July 12, 2024. https://www.kidney.org/atoz/content/social-determinants-health-and-chronic-kidney-disease#sdoh-and-ckd **2.** Centers for Disease Control and Prevention. May 15, 2024. Accessed July 12, 2024. https://www.cdc.gov/public-health-gateway/php/about/social-determinants-of-health.html#:~:text=These%20forces%20and%20systems%20encompass,in%20its%20key%20health%20indicators **3.** Centers for Disease Control and Prevention. Accessed August 28, 2024. https://www.cdc.gov/prepyourhealth/discussionguides/economicstability.htm **4.** Centers for Disease Control and Prevention. Accessed August 28, 2024. https://www.cdc.gov/prepyourhealth/discussionguides/education.htm **5.** Centers for Disease Control and Prevention. Accessed August 28, 2024. https://www.cdc.gov/prepyourhealth/discussionguides/healthcare.htm#:~:text=Health%20care%20access%20and%20quality%20includes%20key%20issues%2C%20such%20as,such%20as%20mental%20health%20services **6.** Centers for Disease Control and Prevention. Accessed August 28, 2024. https://www.cdc.gov/prepyourhealth/discussionguides/neighborhood.htm#:~:text=and%20Built%20Environment,Neighborhood%20and%20Built%20Environment,their%20health%20and%20well%20being **7.** Centers for Disease Control and Prevention. Accessed August 28, 2024. https://www.cdc.gov/prepyourhealth/discussionguides/community.htm#:~:text=Social%20%26%20Community%20Context,Social%20%26%20Community%20Context,the%20conditions%20of%20daily%20life

Poor socioeconomic factors increase an individual's likelihood of developing CKD and indicate potentially poorer prognosis[1]

Food Insecurity

Nearly **1 in 3 adults** with CKD experienced food insecurity (2017-2020)[2]

Socioeconomic

Data show that **as a county's poverty level increases, so does the prevalence of diagnosed CKD among Medicare beneficiaries**[3,4]

Housing Insecurity

Unstable housing or homelessness was associated with an **increased risk** of end-stage renal disease or death in patients with kidney disease[5]

CKD, chronic kidney disease; SDoH, social determinants of health; T2D, type 2 diabetes.

References: 1. Shlipak MG et al. *Kidney Int.* 2021;99(1):34-47. **2.** Centers for Disease Control and Prevention. Accessed July 12, 2024. https://nccd.cdc.gov/CKD/detail.aspx?Qnum=Q712&Strat=CKD#refreshPosition **3.** Centers for Disease Control and Prevention. Accessed October 11, 2024. https://www.cdc.gov/pcd/issues/2024/23_0286.htm#T1_down **4.** Centers for Disease Control and Prevention. Accessed July 15, 2024. https://nccd.cdc.gov/CKD/detail.aspx?Qnum=Q783#refreshPosition **5.** Hall YN et al. *Clin J Am Soc Nephrol*. 2012;7(7):1094-1102.

Health disparities and inequities increase an individual's chances of developing CKD and impact minorities at greater rates

Black or African Americans are **more likely to have comorbidities that increase the risk of kidney disease, are almost 4 times more likely to have kidney failure, and have more than twice the kidney disease-related mortality rate** as compared to White individuals[1,2]

Although evidence-based kidney health testing is recommended by the AACE, ADA, ESC, and KDIGO[3-6], lower rates of KED fulfillment of recommended testing were found in Black or African American patients[7]

SDoH, which include healthcare access and quality, economic policies, social policies, and racism, **disproportionately impact patients of different racial backgrounds**[8,9]

AACE, American Association of Clinical Endocrinology; ADA, American Diabetes Association; CKD, chronic kidney disease; ESC, European Society of Cardiology; KDIGO, Kidney Disease Improving Global Outcomes; KED, Kidney Health Evaluation for Patients With Diabetes; SDoH, social determinants of health.

References: 1. National Kidney Foundation. Accessed July 12, 2024. https://www.kidney.org/advocacy/legislative-priorities/health-disparities **2.** Benjamins MR et al. *J Gen Intern Med.* 2022;37(6):1351-1358. **3.** American Diabetes Association Professional Practice Committee. *Diabetes Care*. 2024;47(suppl 1):S219-S230. **4.** Marx N et al. *Eur Heart J.* 2023;44(39):4043-4140. **5.** de Boer IH et al. *Kidney Int.* 2022;102(5):974-989. **6.** Blonde L et al. *Endocr Pract.* 2022;28(10):923-1049. **7.** Ferrè S et al. *Mayo Clin Proc Innov Qual Outcomes*. 2023;7(5):382-391. **8.** National Kidney Foundation. Updated January 2, 2023. Accessed July 12, 2024. https://www.kidney.org/atoz/content/social-determinants-health-and-chronic-kidney-disease#sdoh-and-ckd **9.** Centers for Disease Control and Prevention. May 15, 2024. Accessed July 12, 2024. https://www.cdc.gov/public-health-gateway/php/about/social-determinants-of-health.html

Reducing inequities involves both broad and targeted initiatives, with a goal to improve testing, diagnosis, and treatment

What you can do:

- Drive eGFR and uACR testing for all patients with T2D at least annually
- Ensure patients with lab-indicated CKD receive a diagnosis
- Support treatment with guidelines-directed medical therapies
- Analyze data to detect testing and treatment inequities between patient populations (race, geography, etc). Target under-served populations with HCP and patient education

How we can help:

HCP webinars:

- Highlight the importance of testing, diagnosing, and treating patients, as well as the impact of CKD associated with T2D on CV health

Unbranded educational resources:

For health plans, PBMs, and health system HCPs:
CKD-T2D-for-Pop-Health.com

For patients:
CKDandT2d.com

Partnerships with health plans and health systems, aimed to:

- Improve uACR and eGFR testing rates for patients with T2D
- Educate on the impact of albuminuria, including poor CV outcomes
- Inform HCPs on treatment guidelines for CKD associated with T2D

CKD, chronic kidney disease; CV, cardiovascular; eGFR, estimated glomerular filtration rate; HCP, healthcare provider; PBM, pharmacy benefit manager; T2D, type 2 diabetes; uACR, urine albumin-creatinine ratio.

Clinical guidelines support

National Kidney Foundation (NKF) KDOQI clinical practice guidelines:
kidney.org/professionals/kdoqi

American Society of Nephrology (ASN) guidelines:
epc.asn-online.org/resource_lib/diabetic-kidney-disease

Kidney Disease Improving Global Outcomes (KDIGO) guidelines:
kdigo.org/guidelines/diabetes-ckd

KDOQI, Kidney Disease Outcomes Quality Initiative.