Diabetes and Chronic Kidney Disease: KDIGO 2022 Clinical Practice Guideline

About the Guideline

- Kidney Disease: Improving Global Outcomes (KDIGO) was founded in 2003 and created their first clinical practice guideline (CPG) for diabetes management in chronic kidney disease (CKD) in 2020.
- This guideline is an update to the 2020 CPG, as a collaboration with KDIGO and the American Diabetes Association (ADA); it was revised quickly after the first CPG because of the wealth of new information and the fast progression in the treatment of diabetes and CKD.
- The Evidence Review Team (ERT) brought up to date the topics and literature originally used in the 2020 guideline.
- The reviewing workgroup included multidisciplinary, diverse, multinational experts. In addition, two peers, who themselves have diabetes and CKD, actively participated to ensure that the emphasis of the CPG remained patient centered.
- The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) system was utilized, and recommendations were made based only on high-quality evidence.
- Practice points were made when clinical guidance felt it was necessary, but when the evidence was not sufficient to make a recommendation.
- Recommendations and practice points can be utilized to help make individual care decisions of diabetic patients with CKD.

Key Clinical Considerations

Become familiar with the recommendations, practice points, and best-practice statements provided in this guideline, especially if you work in an acute care setting.

Comprehensive Diabetes and CKD Management

- Decreasing cardiovascular risk and preventing kidney disease from advancing requires a thorough treatment plan for both diabetes and CKD.

Renin-Angiotensin System (RAS) Blockade

- Treat patients with diabetes, high blood pressure, and albuminuria with an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin II receptor blocker (ARB) and titrate to the maximum approved dosage tolerated.
    - ACE inhibitor or ARB treatment may be considered in patients who have normal blood pressure but also have diabetes and albuminuria.
    - Two to four weeks after beginning an ACE inhibitor or an ARB or after raising the dose, monitor the patient for fluctuations in blood pressure along with serum laboratory studies for creatinine and potassium levels.
- Continue therapy unless the patient's serum creatinine rises more than 30%, either during the first four weeks following initiation or following an increase in dose.
- Patients should take contraception while on ACE inhibitor or ARB therapy; patients should *stop* taking ACE inhibitor or ARB medication if they are pregnant or considering becoming pregnant.

- Treat associated hyperkalemia in patients taking ACE inhibitor or ARB therapy rather than adjusting the dose or discontinuing the medication.
- Discontinue or reduce therapy if the patient experiences symptomatic low blood pressure or hyperkalemia that cannot be appropriately managed.
- Do not use an ACE inhibitor with an ARB or an ACE inhibitor or ARB in combination with a direct renin inhibitor.

Sodium-Glucose Cotransporter 2 Inhibitors (SGLT2i)

- A SGLT2i should be used in patients with type 2 diabetes (T2D), CKD, and an estimated glomerular filtration rate (eGFR) of 20 mL/min per 1.73 m^2 or higher.
- SGLT2i therapy can provide cardiovascular and kidney protection in patients with CKD, even in those without T2D, and it is safe to add to a regimen that already includes other glucose-lowering agents.
- SGLT2i selection should be prioritized based on documented evidence of its cardiovascular or kidney benefits and the patient's eGFR.
- Consider withholding SGLT2i in situations of critical medical illness, prolonged fasting, or surgery.
- Decrease the dose of thiazide or loop diuretics before initiating SGLT2i therapy if there is concern for hypovolemia.
- A reversible decrease in eGFR may occur after initiation of SGLT2i therapy, but it is not an indication to stop therapy.
- Continuation of STGLT2i therapy may be considered, even if the eGFR falls below 20 mL/min per 1.73 m^2, unless it is not tolerated or if kidney replacement therapy is initiated.
- SGLT2i therapy is not recommended for patients who have received a kidney transplant.

Mineralocorticoid Receptor Antagonists (MRA)

- An MRA with proven cardiovascular or kidney benefits is suggested for patients with T2D, normal serum potassium, an eGFR above 25 mL/min per 1.73 m^2, and albuminuria despite RAS inhibitor therapy at the maximum tolerated dose.
- A nonsteroidal MRA may be added to RAS inhibitor and SGLT2i therapy.
    - Serum potassium should be monitored while on nonsteroidal MRA therapy, to avoid hyperkalemia.
    - Documented kidney or cardiovascular benefits should be prioritized when choosing a nonsteroidal MRA agent.
- For heart failure, hyperaldosteronism, or refractory hypertension, steroidal MRA therapy should be used.
    - Patients with a low eGFR may experience high serum potassium or reversible decline in glomerular filtration.

Smoking Cessation

- Smoking cessation is recommended for all patients.
- Patient counseling should be provided to reduce secondhand smoke exposure.

Lifestyle Interventions

- For patients with diabetes and CKD not treated with dialysis, the suggested protein intake is 0.8 g protein per kg of body weight.
    - For patients treated with dialysis, the suggested protein intake is 1 to 1.2 g of protein per kg of bodyweight.
- Sodium intake should be less than 2 g per day.
- Engage multidisciplinary resources such as registered dietitians, diabetes educators, peer counselors, and accredited nutrition providers in the nutritional care of patients.
- Utilize shared decision-making, and consider factors such as comorbidities, food intolerances, cultural differences, food resources, and cost when recommending dietary options to patients and their families.

Physical Activity

- Moderate physical activity for at least 150 minutes a week is recommended, as appropriate, considering factors such as the patient's cardiovascular and physical tolerance, the presence of comorbidities, access to resources, and risk for falls.
- Patients with obesity, especially those with an eGFR equal to or greater than 30 mL/min per 1.73 m^2, should be advised to lose weight.

Glucose-Lowering Therapies for Patients with T2D and CKD

- Suggested first-line therapy includes both metformin and SGLT2i therapy, lifestyle therapy, and additional drug therapies as needed for glucose control.
    - Consider patient preference, therapy cost, comorbidities, and eGFR when choosing additional drugs to manage glycemia.

Metformin

- Metformin is recommended for patients with T2D, CKD, and an eGFR of 30 mL/min per 1.73 m^2 or higher.
    - This includes kidney transplant recipients with T2D and an eGFR of 30 mL/min per 1.73 m^2 or higher.
    - eGFR surveillance while on metformin therapy is recommended. Increase monitoring frequency for patients with an eGFR below 60 mL/min per 1.73 m^2.
    - If eGFR falls below 45 mL/min per 1.73 m^2, titrate the metformin dose; consider titrating the metformin dose for certain patients whose eGFR falls between 45 and 59 mL/min per 1.73 m^2.
    - After four years of metformin therapy, begin monitoring patients for vitamin B12 deficiency.

Glucagon-Like Peptide-1 Receptor Agonists (GLP-1 RAs)

- Prescribe a long-acting GLP-1 RA when metformin and SGLT2i are inadequate to meet the patient's glycemic goals.
    - The documented cardiovascular benefits should be considered when choosing an appropriate GLP-1 RA.
    - GLP-1 RA should not be used in combination with dipeptidyl peptidase-4 inhibitors.
    - The risk of hypoglycemia increases when GLP-1 RA therapy is used in addition to sulfonylurea or insulin therapy.

- When intentional weight loss is a goal, GLP-1 RA medication may be an ideal choice for patients with T2D, CKD, and obesity.

Reference

Kidney Disease: Improving Global Outcomes (KDIGO) Diabetes Work Group (2022). KDIGO 2022 Clinical Practice Guideline for Diabetes Management in Chronic Kidney Disease. *Kidney international*, *102*(5S), S1–S127. https://doi.org/10.1016/j.kint.2022.06.008