Chronic Kidney Disease in Type 2 Diabetes
Diagnosis and Clinical Care

Screening
Measure annual eGFR and UACR in people with diabetes

Diagnosis
eGFR <60 mL/min/1.73m² or UACR ≥30 mg/g for ≥3 months

<table>
<thead>
<tr>
<th>CKD Stage</th>
<th>1 and 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>eGFR (mL/min/1.73m²)</td>
<td>≥60</td>
<td>30-59</td>
<td>15-29</td>
<td>&lt;15</td>
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<tr>
<td>and UACR (mg/g)</td>
<td>≥30</td>
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* At CKD stages 3-5 albumin may be present at any note. Increasing albuminuria and declining eGFR predict worse outcomes.

Evaluation for Non-Diabetic Etiologies of CKD
CKD in people with diabetes may be due to other causes as well as diabetic kidney disease. Consider additional evaluation for non-diabetes causes of CKD. 
- CMP, UA, Uric Acid, PO4, CBC, ANA, RF, C3, C4, HepBsAg, HepCAb, and HIV
- If patient >40 yrs old, check SPEP and UPEP for abnormal proteins
- Retinal examination (kidney disease and retinopathy often occur together)
- Renal ultrasound

Clinical Care for People with Diabetes and CKD

Renal Protection
- **Blood Pressure (BP) Control is the most effective CKD intervention.**
  - Target BP <140/90 for most patients; Consider lower BP target (if able to tolerate) in younger patients, those with CVD, or those at high risk of CKD progression.
  - Prescribe ACEI/ARB for hypertension and CKD unless contraindicated. (Monitor creatinine and potassium levels for patients on ACEI/ARB treatment.)
  - Limit dietary sodium to control BP and optimize therapeutic benefits of ACEI/ARB.
  - Consider SGLT-2 inhibitor regardless of A1C when eGFR 30-60 or UACR ≥30 to reduce risk of CKD progression (see Rx guidelines for individual agents).
  - Consider GLP-1 RA to reduce risk of CKD progression, especially if eGFR <30.
  - Avoid NSAID use to decrease risk of kidney damage. Don’t use during acute illness.
  - Provide tobacco cessation treatment. Advise to avoid and/or limit exposure to secondhand smoke.

Diabetes Management
- Evaluate A1C every 3-6 months; individualize A1C and blood glucose targets.
- Monitor closely for hypoglycemia with declining renal function, particularly in patients taking insulin or sulfonylurea. Stop and/or adjust doses as needed.
- Consider reducing metformin as CKD progresses; discontinue if eGFR <30.
- Address CVD risk including lipid management, aspirin use, and tobacco cessation.

Medication Safety & Sick Day Guidance
- Review OTC medications, herbal and nutritional supplement use.
- Check for dosing guidelines when prescribing any medications when eGFR <30.
- Counsel to reduce/hold diuretics, ACEI/ARBs, and don’t use NSAIDs during acute, potentially volume-depleting illnesses to reduce risk of acute kidney injury (AKI).
  - Advise when to restart withheld medications.

Renal Nutrition Therapy
- Refer to dietitian for medical nutrition therapy based on CKD progression. Dietary interventions are highly effective for CKD.

Chronic Kidney Disease in Type 2 Diabetes
Monitoring and Managing CKD

Laboratory Testing
Monitor Chem7, eGFR, Calcium, Phosphate (PO4), Hemoglobin, and UACR annually, or more frequently based on CKD stage and rate of progression.

Acidosis
- Start sodium bicarbonate 325-650 mg BID (or TID) if bicarbonate (CO2) <22 mEq/L.
- Monitor for fluid retention with sodium bicarbonate use.

Anemia
- Test for correctable causes of anemia: B12/folate, iron studies (Fe, %Sat, TIBC), ferritin and transferrin saturation, CBC with diff, and stool for occult blood.
- Start ferrous sulfate 325 mg QD to TID if iron studies are low.
- Consider IV iron and/or erythropoiesis stimulating agents for patients with anemia unresponsive to oral iron.

Edema/Fluid Overload
- Advise sodium reduction (<2300 mg/d).
- Use diuretics (thiazide, loop diuretics) for fluid retention. Start with loop diuretics in patients with eGFR <30.
- Monitor diuresis (BP, BUN/Cr) in patients with edema and low serum albumin.

Hyperkalemia
- Refer to dietitian for potassium (K⁺) restriction (Note: Many salt substitutes and low sodium diets have increased K⁺).
- Treat acidosis, use loop diuretic, or lower the dose of ACEI/ARB to normalize K⁺.

Mineral and Bone Disorder (MBD)
Goal: Decrease serum phosphate & maintain normal calcium to mitigate soft tissue calcification and renal osteodystrophy.

Note: Available treatment guidelines are based on observational data and expert opinion.

Phosphate (PO4):
- Refer to dietitian for phosphorus restriction including processed meats and soft drinks.
- Start phosphate binders if PO4>4.6 mg/dL. Be mindful that taking phosphate binders may impose a significant pill burden on the patient.
  - CaCO3 (Oyst-Cal or TUMS) 500-2000 mg with meals (No more than 3750 mg/d)
  - Ca acetate 1334-2668 mg with meals (No more than 5900 mg/d)
  - Sevelamer 800-1600 mg TID

Calcium (Ca): 
- Supplement if Ca <8.4 mg/dL, consider calcium-based phosphate binders.
- Hold medications that increase calcium if Ca >10.2 mg/dL.

Vitamin D Replacement:
  - Ergocalciferol (D2) 50,000 international units/wk
  - Cholecalciferol (D3) 800-1000 international units/d

Medications on the IHS National Core Formulary are in **BOLD** above.

Education and Referrals
- Case management and education about CKD are highly effective in slowing progression.
- Begin discussions early concerning renal replacement therapy (dialysis, transplantation) for patients with progressive CKD. This conversation may be best initiated in the primary care setting with a trusted health care provider.
- Refer patients to a nephrologist for diagnostic or therapeutic questions, and/or in preparation for renal replacement therapy.

See DDTP Kidney Care Standard for additional information.

IHS Division of Diabetes Treatment and Prevention

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