

# Chronic Kidney Disease in Type 2 Diabetes

## Diagnosis and Clinical Care

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## Monitoring and Managing CKD

### Screening

Measure annual eGFR and UACR in people with diabetes

### Diagnosis

eGFR <60 mL/min/1.73m<sup>2</sup> or UACR ≥30 mg/g for ≥3 months

CKD Stage	1 and 2	3	4	5
eGFR (mL/min/1.73m <sup>2</sup> )	≥60	30-59	15-29	<15
and UACR (mg/g)	≥30	*	*	*

\* At CKD stages 3-5 albumin may be present at any value. 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, PO<sub>4</sub>, 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 <130/80 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.

### Laboratory Testing

Monitor Chem7, eGFR, Calcium, Phosphate (PO<sub>4</sub>), 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 (CO<sub>2</sub>) <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<sup>+</sup>) restriction (Note: Many salt substitutes and low sodium diets have increased K<sup>+</sup>).
- Treat acidosis, use loop diuretic, or lower the dose of ACEI/ARB to normalize K<sup>+</sup>.

### 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 (PO<sub>4</sub>):

- Refer to dietitian for phosphorus restriction including processed meats and soft drinks.
- Start phosphate binders if PO<sub>4</sub>>4.6 mg/dL. Be mindful that taking phosphate binders may impose a significant pill burden on the patient.
  - **CaCO<sub>3</sub>** (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.