Type 2 Diabetes - Chronic Kidney Disease

CKD is eGFR < 60ml/min or kidney damage for ≥ 3 months (e.g. urine sediment, abnormal imaging, or albuminuria (UACR < 30mg/g = nl, 30-300 = micro, >300 = macro))

Stages of Chronic Kidney Disease (CKD)

<table>
<thead>
<tr>
<th>Stage</th>
<th>eGFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>3</td>
<td>30-59</td>
</tr>
<tr>
<td>4</td>
<td>15-29</td>
</tr>
<tr>
<td>5</td>
<td>&lt; 15</td>
</tr>
</tbody>
</table>

Markers of progression: decreasing eGFR, increasing albuminuria, poor BP control

Workup of CKD and to r/o non-diabetes causes

CMP, UA, UACR, Uric Acid, Phos, CBC, ANA, RF, C3, C4, HepB sAg, HepC Ab, dilated retinal exam, and renal U/S; if pat >40 yrs & UACR is pos then check SPEP and UPEP

Referrals

Nephrologist: When eGFR < 30 or sooner if unsure of etiology or problems
Nutrition: Refer to RD for consult (protein, Na+, K+, PO4, fluids, saturated fat)

Managing Complications of CKD – Stages 3-5

**Acidosis**

If CO2 < 22mmol/L Start sodium bicarbonate 325-650mg (1-2 tabs) TID-QID Goal: CO2 ≥ 22mmol/L

Anemia

Check Hb at least yearly: Anemia = Hb <13.5 g/dL adult men, <12 g/dL adult women; r/o B12/folate deficiency, GI blood loss, other causes

Baseline Labs: Ferritin, transferrin % sat, iron studies (Fe, % Sat, TIBC), CBC+diff Start oral iron therapy if ferritin/iron studies low

Ferrous Sulfate (FeSO4) 325mg daily to TID Consider docusate 100mg BID to reduce constipation

Monitor ferritin to avoid iron overload Consider IV iron or blood transfusion if needed

Safety of erythropoiesis stimulating agents (ESA) unclear; reserve for patients on dialysis, pending renal transplant, or Hb < 9 with symptoms unresponsive to treatment above

Blood Pressure

**Most effective CKD intervention:** BP goal <130/80; continue ACEI/ARB (watch K+)

Cardiovascular Disease (CVD)

CVD: CKD increases CVD risk – patients on aspirin (if no contraindications)

Achieve lipid targets, encourage tobacco cessation

**Diabetes**

Blood sugar control—as renal fxn declines pts’ BGs often improve—titrate meds down as needed; Caution setting an A1c target <7% if advanced CKD or CVD

D/C metformin when Creatinine >1.5 men or >1.4 women

Peripheral Neuropathy: Foot ulcers common, check feet each visit, refer to shoe clinic

Retinopathy: Ophth/retinal visits regularly

Autonomic Neuropathy: Frequent BP fluctuations, including orthostatic symptoms.