Treating CKD Complications
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Chronic Kidney Disease or CKD is a common complication in our patients with long standing diabetes. CKD in turn can result in complication of it’s own including acidosis, anemia, and metabolic bone disease. We can improve the outcomes in these patients by screening for, monitoring, and treating CKD complications: including early preparations for those patients who will need kidney replacement therapy.

The Type 2 Diabetes – Chronic Kidney Disease Algorithm Card was designed to help busy providers monitor and treat the multiple complications of CKD. Click on the link above to download and print a pdf of this card. Let me give you a brief overview of the card. CKD is defined as either an eGFR of less than 60ml/min or evidence of kidney damage, such as albuminuria for at least 3 months. Staging of CKD, as shown on the card, is currently based on the eGFR. Markers that CKD is progressing include decreasing eGFR, increasing albuminuria and poor blood pressure control.

The following lab work is recommended in the initial workup of CKD and to rule out non-diabetes causes of CKD. Remember that not all CKD in patients with diabetes is diabetic nephropathy. Refer your patients to a nephrologists when their eGFR is less than 30ml/min or sooner if you are unsure of the etiology of the kidney disease or if you are having difficulty managing any of the complications. Refer the patient to a Registered Dietitian for education on protein, sodium, potassium, phosphorus, fluids and saturated fat. It is important to test for and manage the complications of CKD in our patients with diabetes who’s CKD has reached stage 3 and beyond.

Treat acidosis using sodium bicarbonate when the CO2 or bicarb level is less than 22mm/L. The usual dosage range for sodium bicarbonate is 325 to 650 mg 2 to 4 times a day. The goal is a bicarb level of at least 22. It is important to test for anemia by checking a hemoglobin at least yearly in patients with CKD. Anemia is defined as a hemoglobin of less than 13.5 g/dL in adult men and less than 12 in adult woman.

Be sure to rule out other causes of anemia, such as B12 and folate deficiencies or GI blood loss. To evaluate anemia, obtain baseline labs including ferritin, transferrin, iron studies and CBC with differential. Start oral iron therapy if ferritin or iron studies are low.

Start with ferrous sulfate at 325mg which can be used up to TID. Consider elemental iron in patients unable to tolerate ferrous sulfate. And don’t forget to include ducosate 100 mg up to TID to reduce the inevitable constipation associated with oral iron therapy.

Monitor ferritin levels to avoid iron overload. Consider IV iron or blood transfusion if needed to reduce anemia symptoms. The safety of erythropoiesis stimulating agents, or ESAs, is
unclear from recent research. And it is recommended until national guideline are updated to reflect this research that we reserve this treatment for patients on dialysis, for those pending renal transplant, or when the hemoglobin is less than 9 with associated symptoms of anemia unresponsive to treatments just listed. You must never forget that the most effective CKD intervention is controlling hypertension. The blood pressure goal continues to be blood pressure of less than 130/80. Continue to use ACEI inhibitors and angiotensin-reception blockers as indicated, remebering to watch K+ levels as CKD progresses.

Just as diabetes increases cardiovascular disease risk, the addition of CKD further increases this risk. We need to be sure that patients are on aspirin therapy if there are no contraindications. We also need to redouble our efforts to achieve lipid targets and to encourage tobacco cessation when indicated. As kidney function declines, patient’s glucose may actually improve due to increased glycosuria. Be sure to titrate medications down as needed and use caution in setting an A1c target of less than 7% in patients with advanced CKD or CVD.

As CKD progresses so do other diabetes complications. Foot ulcers become more common. Check patient’s feet at each visit to clinic and refer for extra depth shoes or orthodics as needed. Retinopathy also progresses with complications such as retinal hemorrhages becoming more common. Ensure that your patients are getting their eyes evaluated at least annually and more often if indicated. Autonomic neuropathy also progresses. It can create frequent blood pressure fluctuations, including orthostatic symptoms, making blood pressure control especially problematic. In the later stages of CKD, fluid balance becomes more of an issue. This usually requires treatment with a loop diuretic such as furosemide, which can be titrated up as needed to achieve fluid balance.

The next section of the card is on metabolic bone disease and the medications used to address it. There are two components to metabolic bone disease. First, balance of phosphorus and calcium. Second, control of secondary hyperparathyroidism as manifested by an elevated intact PTH. Control of phosphorus by use of binders, such as calcium, is evidence based.

The use of vitamin D analogs to reduce iTPH is still based on consensus opinion. And as such while it appears in most major guideline providers should be aware that high grade evidence is still lacking for this.

The last section of the card is a table listing recommendations for laboratory monitoring of CKD based on GFR status. Please note that these are general guidelines and tests should be ordered more or less often than shown, depending on the patient’s clinical situation. Thank you for joining us on this tour of the type 2 diabetes chronic kidney disease card. We hope it will assist you as you care for your diabetic patients with CKD.