Module 10 Diabetic Kidney Disease

Diabetic kidney disease is usually a clinical diagnosis made based on the presence of albuminuria and/or reduced eGFR in the absence of signs or symptoms of other primary causes of kidney damage[1].

Urinary albumin-creatinine ratio (ACR) >2.5mg/mmol in men and >3.5mg/mmol in women[2] indicate rise in urinary albumin loss. An ACR >25mg/mmol represents a more severe and established form of renal disease and is more strongly predictive of total mortality, cardiovascular mortality and morbidity, and end-stage renal failure. Refer to nephrologists when indicated (Table 1).

Table 1. When to refer to nephrologists

1. When doubt exists as to the diagnosis of diabetic kidney disease. This arises with atypical features suggestive of additional or alternative renal pathology which includes history of diabetes with a very short duration, the presence of haematuria, significant renal impairment or proteinuria without other microangiopathy like diabetic retinopathy.

2. When need arises for evaluation in patients at risk of rapid progression or deterioration of renal function

3. When need arises for the planning of renal replacement therapy with patients progressing into end stage renal failure [serum creatinine over 300 umol/l].

Screening of diabetic kidney disease (Figure 1)

- Screening for diabetic kidney disease should be performed at least annually. **D**

- Measure random spot urine albumin creatinine ratio (ACR) and serum creatinine at least yearly. If the levels are abnormal, the test should be repeated within 3 months and more often thereafter to monitor progress. **D**

- In patients with clinical proteinuria, especially those with short disease duration or without other microvascular complications, other causes such as urinary tract infection, severe hyperglycaemia, cardiac failure and other non-diabetes renal disease (e.g. stone and glomerulonephritis) should be excluded.

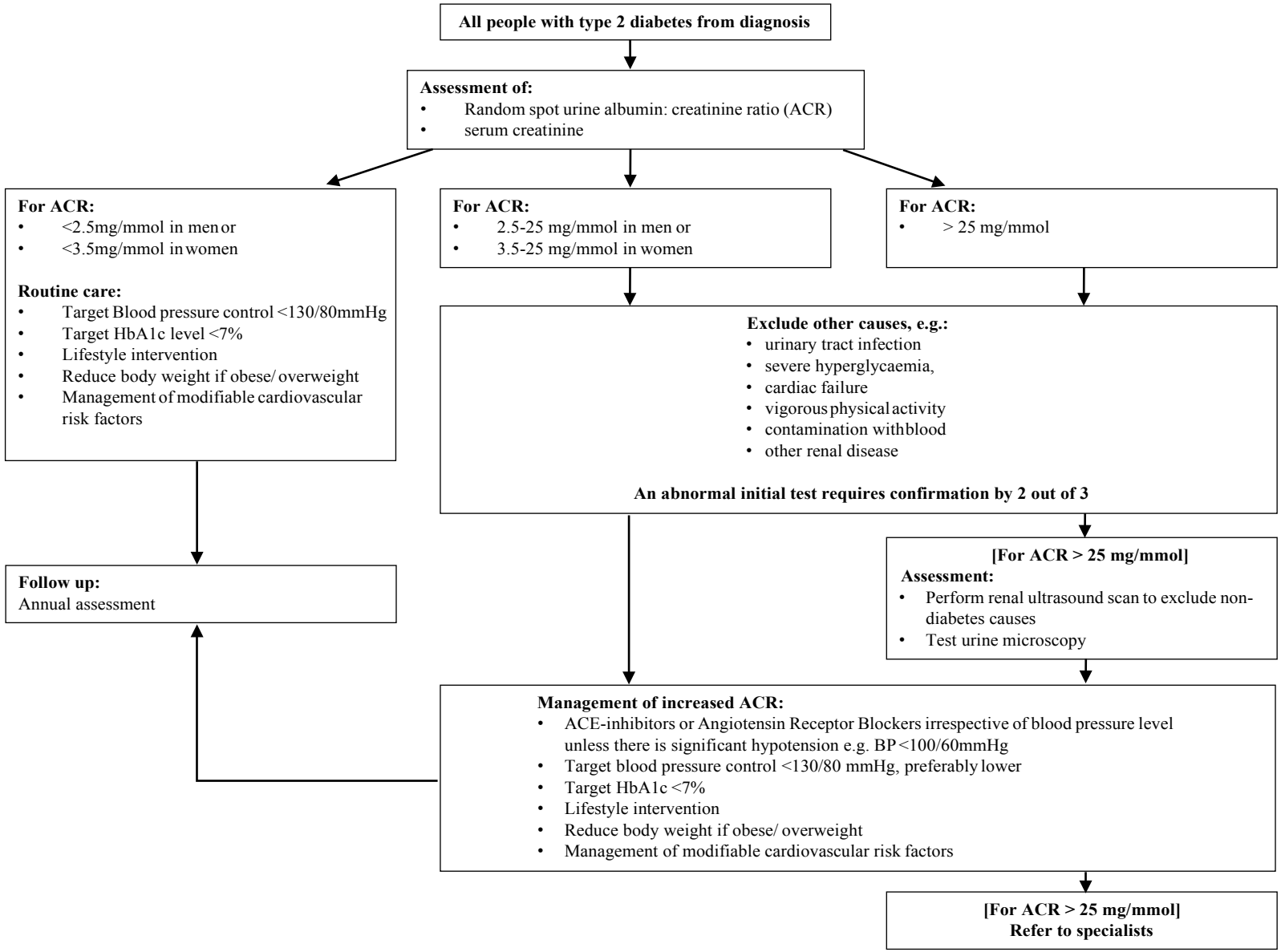
Drug Treatment

In the treatment of both micro- and macroalbuminuria, either Angiotensin Converting Enzyme (ACE) inhibitors or Angiotensin Receptor Blocker (ARB) should be used [3,4,5] . **A**

- In the setting of albuminuria or diabetic kidney disease, in patients unable to tolerate ACE inhibitors and/or ARBs, consider the use of calcium channel blockers, ß-blockers, or diuretics for the management of blood pressure.

- If ACE inhibitors, ARBs, or diuretics are used, monitor serum potassium levels for the development of hyperkalemia.

Figure 1. Screening and Management of Diabetic Kidney Disease



Reference:

1. American Diabetes Association. 10. Microvascular complications and foot care: Standards of Medical Care in Diabetes - 2018. Diabetes Care 2018;41(Suppl. 1):S105–S118.
2. Mogensen CE: Microalbuminuria in perspectives. In Diabetic Renal-Retinal Syndrome: Pathogenesis and Management, Update 2002. Friedman EA, L'Esperance FA, Eds. London, Kluwer, 2002, p. 105–119.
3. The ACE Inhibitors in Diabetic Nephropathy Trialist Group. Should all patients with type 1 diabetes mellitus and microalbuminuria receive angiotensin-converting enzyme inhibitors: a meta-analysis of individual patient data. Ann Intern Med 2001;134(5):370-9.
4. Strippoli GFM, Bonifati C, Craig M, Navaneethan SD, Craig JC. Angiotensin converting enzyme inhibitors and angiotensin II receptor antagonists for preventing the progression of diabetic kidney disease (Cochrane Review). In: The Cochrane Library, Issue 4, 2006. London: Wiley.
5. Kshirsagar AV, Joy MS, Hogan SL, Falk RJ, Colindres RE. Effect of ACE inhibitors in diabetic and nondiabetic chronic renal disease: a systematic overview of randomized placebo-controlled trials. Am J Kidney Dis 2000;35 (4):695-707.