CKD management of patients with reduced GFR

CKD (chronic kidney disease) is more common than previously thought, and has greater implications than previously thought. Most people with CKD fall into the mild to moderate categories where hospital-based management is not necessary. For many in this patient group, the cardiovascular impact of their renal disease is more significant than the risk of developing end stage renal failure.

Assessment of severity

Guidance is usefully directed according to severity of renal damage. The 5 K/DOQI CKD (chronic kidney disease) stages are useful. (KDOQI – Kidney Diseases Outcome Quality Initiative – more info)

Stage	GFR	Description	Treatment stage
1	90+	Normal kidney function but urine or other abnormalities point to kidney disease	Observation, control of blood pressure and CV risk factors – see below for management
2	60-89	Mildly reduced kidney function, urine or other abnormalities point to kidney disease	Observation, control of blood pressure and CV risk factors – see below for management

3	30-59	Moderately reduced kidney function	More of the above, plus diagnosis, if indicators of poorer prognosis. – see below for management
4	15-29	Severely reduced kidney function	Planning for endstage renal failure – see info for Stage 3, plus note on stage 4 below. (Also available – more info on dialysis etc for patients)
5	14 or less	Very severe, or **endstage** kidney failure (sometimes called **established renal failure**)	(Also available, more info on treatment choices for endstage renal failure, primarily for patients.)

The K/DOQI stages depend on knowledge of GFR, or more usually, estimation of GFR from serum creatinine (eGFR). This is useful because using serum creatinine alone can give a misleading impression (usually too optimistic) of renal function, although eGFR has its weaknesses – particularly, lack of precision. More information about eGFR (estimated GFR) from the UK CKD Guidelines, and More info about eGFR from the EdREN handbook.

Risks of CKD and CRF

Having signs of kidney disease, even just proteinuria, increases the risk of

- Developing end stage renal failure
- Cardiovascular death

Although the risk of developing end stage renal failure increases progressively as you move through the stages of CKD, on a population-wide basis the increased cardiovascular risk is numerically even more significant.

Management of stages 1 and 2 CKD
Stages 1 and 2 kidney disease: Normal or mildly impaired renal function, with proteinuria or haematuria or other evidence of renal disease. In stage 1, GFR is normal; in stage 2 it is 60-90 mls/min/1.73m2 but note that stage 2 CKD requires more than just slightly reduced GFR – proteinuria or haematuria or other evidence of structural renal disease. The imprecision of eGFR may otherwise label many with normal renal function as falling into CKD stage 2.
Initially • Are there any indications for referral? (Summary: proteinuria >100mg/mmol; proteinuria with haematuria; deteriorating function) • Assessment will include proteinuria quantitation (spot sample), concurrence of haematuria and proteinuria, monitoring of stability of renal function, and assessment of cardiovascular risk. • Email advice may be helfpul. For medical staff seeking advice on patients in Lothian and Borders, rie.renaladvice@luht.scot.nhs.uk.
Long term management • Regular measurements of serum creatinine (annually and in any intercurrent illnesses) • Advice on risk factors for cardiovascular disease: smoking, diet, exercise • Consideration of lipid lowering therapy if 10y risk of cardiovascular disease >20% • Consideration of aspirin if vascular disease. • Meticulous control of hypertension. How low and which drugs (more info). This has been proved to influence outcome. A useful recommendation is to commence therapy if BP is >10mmHg above either the systolic or diastolic target values given.
Management of stage 3+ CKD
Moderately impaired renal function (GFR 30-60). Management in the community is safe and sensible for many patients with stage 3 CKD (see referral guidelines).

Initially

- Are there any indications for referral? (Summary: proteinuria >100mg/mmol; proteinuria with haematuria; deteriorating function; GFR<30)
- Assessment will include proteinuria quantitation (spot sample), concurrence of haematuria and proteinuria, monitoring of stability of renal function, assessment of cardiovascular risk.
- Renal imaging may be justified; it is indicated if there are urinary symptoms, or if referral criteria are met. Ultrasound is valuable and usually sufficient.
- Email advice may be helfpul. For medical staff seeking advice on patients in Lothian and Borders, rie.renaladvice@luht.scot.nhs.uk.

Long term management. *In addition* to measures for stages 1 and 2:

- At stage 3, typically 6 monthly blood tests to include creatinine, Hb, Ca, PO4. Also in any intercurrent illness.
- At stage 4+, the same blood tests 3 monthly
- **Stage 4+ renal failure usually justifies referral**, or at least discussion with a nephrologist, by phone or email.
- Anaemia <100g/l will usually justify referral if other obvious cause apart from renal disease excluded. Management with epoetins/ intravenous iron may be valuable.
- Disordered calcium and phosphate metabolism usually indicates referral.
- Immunization against influenza, pneumococcus. Hepatitis B if dialysis/transplantation likely.
- Regular review of medication to avoid nephrotoxic agents (including NSAIDs) and adjust doses appropriately.

Management of stage 4+ CKD

Severely impaired renal function (GFR <30 for stage 4, <15 for stage 5). Management will usually include at least discussion with the Renal Unit, but for patients in community, the box above provides appropriate advice. For medical staff seeking advice on patients in Lothian, rie.renaladvice@luht.scot.nhs.uk. More info on Stage 4/5 CKD from the UK CKD Guidelines

Management of diabetes mellitus with proteinuria or microalbuminuria

Refer to a renal unit in just the same circumstances as for patients with other types of CKD. See referral guidelines. However earlier management of patients with proteinuria/ microalbuminuria should be more aggressive – ACE inhibitors should be commenced if there is microalbuminuria even with normal blood pressure.

Early management:

- Diabetic control – improved control of blood glucose can reverse microalbuminuria.
- ACE inhibition – titrate to maximum dose even if blood pressure well controlled. ARBs may be an alternative if ACE inhibitors not tolerated. This can eradicate proteinuria and arrest the progression of diabetic nephropathy in a large proportion of patients.
- Meticulous control of hypertension. How low and which drugs (more info).
- Plus manage according to stage of CKD above

Refer if:

- Worsening proteinuria in absence of other microvascular complications
- Unusually rapid progression
- Other criteria in referral guidelines reached, including level of proteinuria on treatment, and …
- Refer if patient reaches stage 4 CKD (GFR<30, e.g. creatinine 240 in a 30y white man, 160 in a 70y white woman). More info on estimation and measurement of GFR.

Summary of indications for measuring serume creatinine

At diagnosis and at least annually in all adult patients with:

- Established renal disease of all types, with or without established CKD, and those at increased risk, such as those with abnormal bladder function.
- Patients with proteinuria or urologically unexplained haematuria (possible glomerulonephritis)
- Hypertension
- Heart failure
- Coronary, cerebral or peripheral vascular disease
- Diabetes mellitus
- Patients taking diuretics, angiotensin converting enzymes, angiotensin receptor blockers
- Multisystem disease including SLE, rheumatoid arthritis, vasculitis