



East Lancashire Diabetes Network

Guideline for Microalbuminuria Screening

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East Lancashire Primary Care Trust

Blackburn with Darwen Primary Care Trust

East Lancashire Hospitals NHS Trust

Microalbuminuria Screening Identification Guidelines

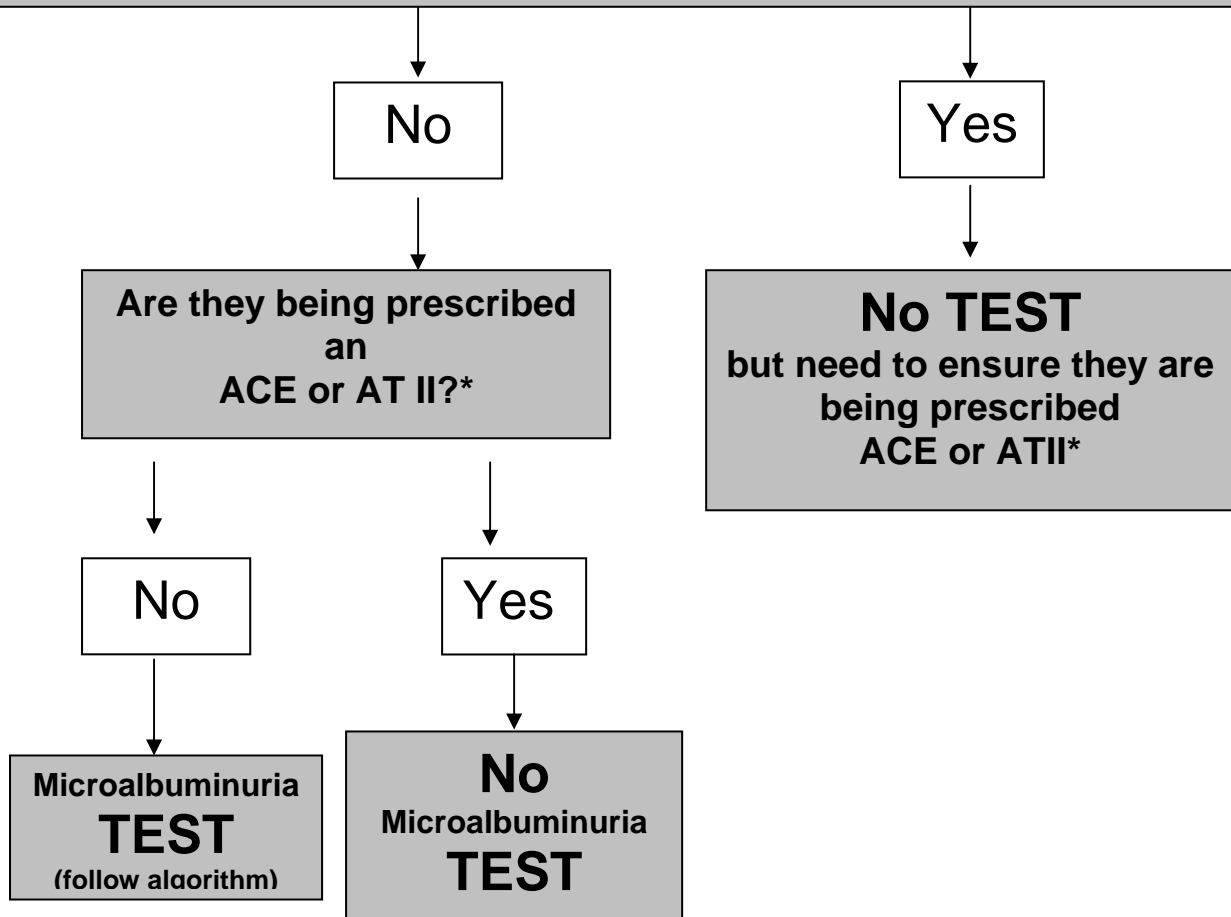
To identify patients who would benefit from microalbuminuria testing

Diabetic Patients aged 12 and over

Is the patient already diagnosed with Proteinuria or Microalbuminuria?

Should be coded:-
 C10EK Type 1 diabetes with persistent proteinuria
 C10EL persistent microalbuminuria
 C10FL Type 2 diabetes with persistent proteinuria
 C10FM persistent microalbuminuria

(See your PRIMIS facilitator for help with validating this register)



NB: **ALL** patients should continue to have annual Protein dipstick

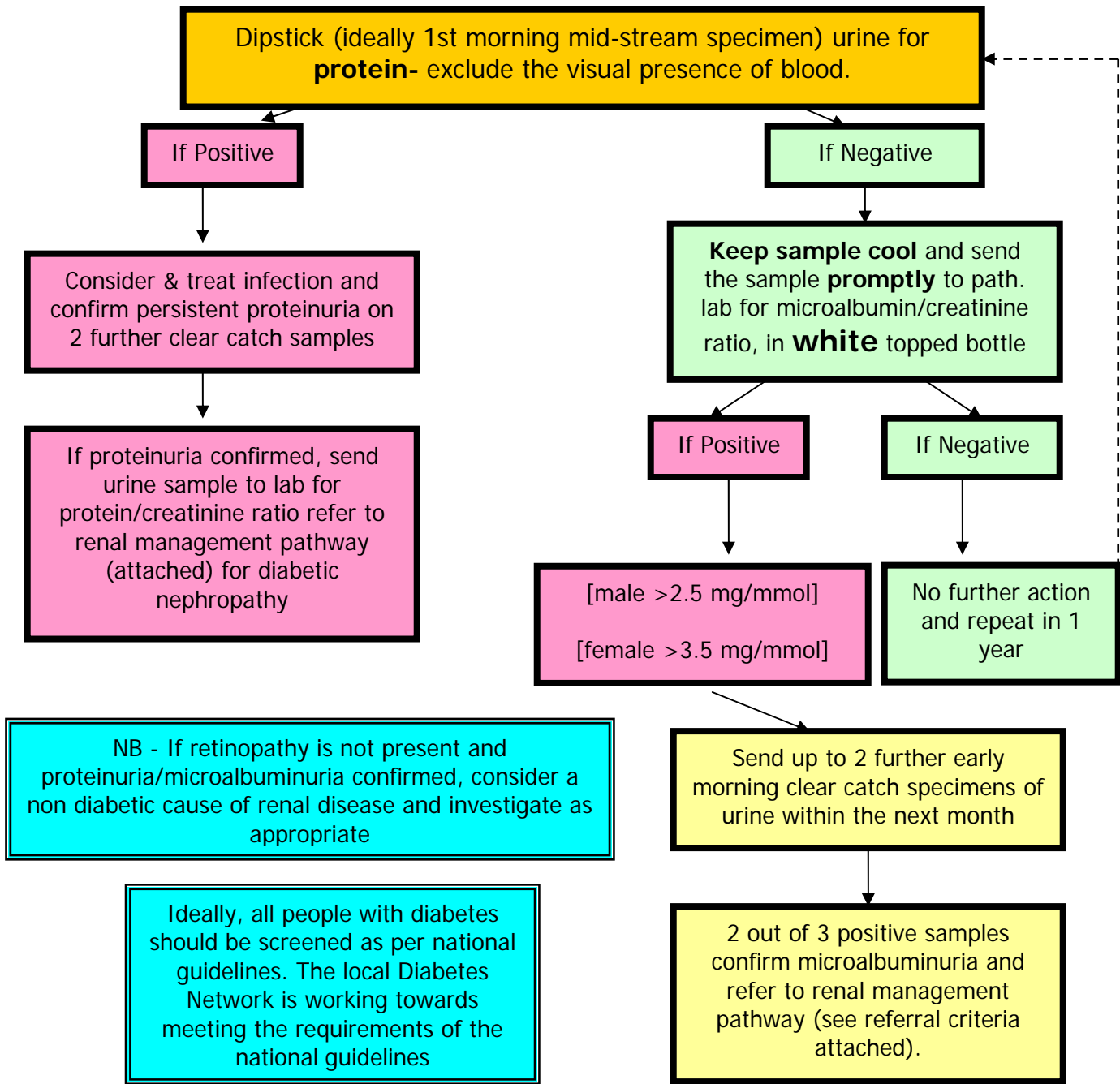
* One of the following codes should be added if ACE cannot be prescribed:-

	<u>ACE Inhibitor</u>	<u>Angiotensin II</u>
Contraindicated	8I28	8I2H
Declined	8I3D	8I3P
Not indicated	8I64	8I6C
Not tolerated	8I74	8I75

MICROALBUMINURIA SCREENING – Screening Strategy

12 years and over

All patients with diabetes over 12 years should have their urine tested annually with a dipstick to identify level of protein

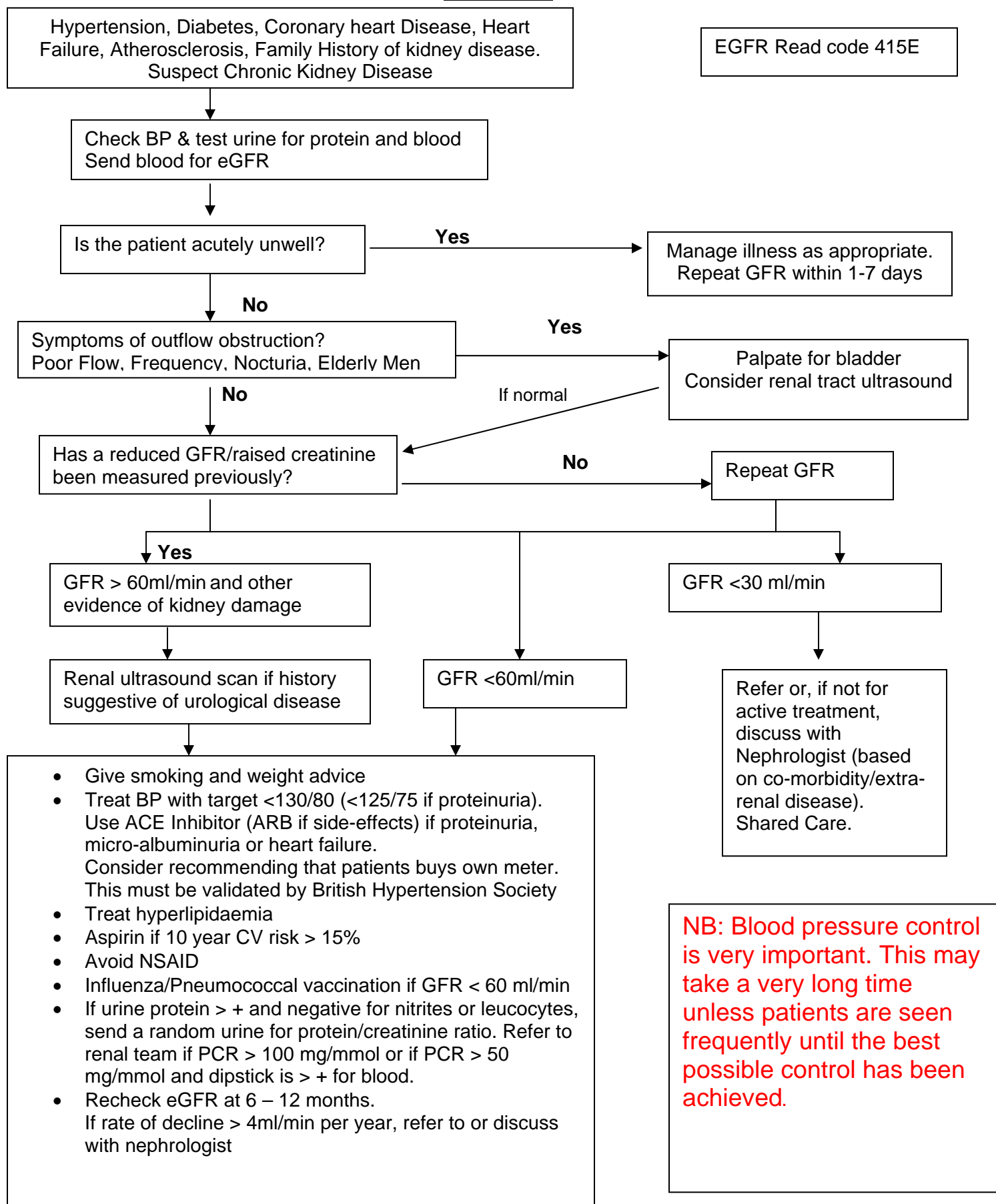


**GUIDE FOR IDENTIFICATION,
MANAGEMENT AND REFERRAL OF ADULTS
WITH CHRONIC KIDNEY DISEASE**

30/6/2007 (version 2.0) – To be reviewed June 2008

- 1) This is a guide to the management and referral of adult patients with chronic kidney disease. Reduction of Kidney Function is common, particularly in the elderly and most patients can be treated in primary care. Acute Renal Failure warrants urgent referral.**
- 2) Cardiovascular complications are the main cause of mortality and morbidity. This is much more common than end-stage renal failure. Reduction of cardiovascular risk is the most important aspect of treatment.**
- 3) Estimated GFR (eGFR) should be calculated from blood using the abbreviated MDRD formulae. Local laboratories will provide this on patients with a significant elevation of plasma creatinine or on request. There is no need for 24 hour urine collections.**
- 4) Reduced kidney function is defined as GFR <60ml/min or 60-90 ml/min in patients with other evidence of kidney disease. A system for staging is provided.**
- 5) GFR > 60 ml/min is considered normal unless there is a second reason to suspect renal disease.**
- 6) Some loss of kidney function is common with ageing. On average GFR falls by 1 ml/min each year after age 40. Referral should take into account age and co-morbidity.**
- 7) Proteinuria indicates kidney disease. This can be estimated from protein-creatinine ratio measured in a single random urine sample (preferably early morning).**
- 8) Macroscopic and microscopic haematuria may indicate intrinsic kidney disease. Refer all patients with macroscopic haematuria and those over age 50 with microscopic haematuria to Urology under 2 week rule. Check renal function in all patients and refer to Nephrology if this is abnormal or there is proteinuria.**
- 9) The use of ACE inhibitors and ARBs often causes concern. The benefits outweigh risks in most patients (see notes) and are dose - related. Use the highest tolerated dose. Reserve ARBs for patients who get side-effects from ACE Inhibitors.**

Summary



Testing urine for protein

By dipstick (**NB** there is no need for 24hr urine collection at any stage)

There is no evidence that asymptomatic urine infection causes proteinuria

If positive (1+ or more):

a) send a urine sample to Clinical Chemistry for protein/creatinine ratio (PCR). If PCR > 30mg/mmol, repeat on early morning urine (first sample on getting up; because protein may be absent after recumbency)

b) test for blood using dipstick

c) estimate GFR from serum creatinine

N.B. Patients with diabetes mellitus should have annual testing for microalbuminuria (urine albumin/creatinine ratio, ACR) only if dipstick protein negative. ACR is a more sensitive and expensive test and not necessary for patients who are not diabetic or diabetic patients who are already taking an ACE Inhibitor or ARB (see diabetes guideline), for whom testing with a standard stick is adequate.

Testing urine for blood

By dipstick (**NB** there is no need for urine microscopy)

If positive (1+ or more)

a) exclude infection, menstruation, trauma

b) test for urine protein (see above)

c) estimate GFR (as above)

Microscopic haematuria is common. Progressive renal disease is rare in the absence of proteinuria, other evidence of kidney disease or +++ of blood. Isolated microscopic haematuria (+ or ++) can be monitored in primary care after excluding urological disease. Urology guidelines require MSSU, renal ultrasound and plain abdominal x-ray at all ages and flexible cystoscopy for those over age 50.

Staging of Kidney Disease

Stage		GFR ml/min	Minimum testing
1*	Normal GFR*	>90	annually
2*	Slight impairment*	60-89	annually
3A	Mild impairment	45-59	annually
3B	Moderate impairment	30-44	6-monthly
4	Severe impairment	15-29	3-monthly
5	Established renal failure	<15	3-monthly

*The terms stages 1 and 2 apply only when there is a structural abnormality such as polycystic kidney disease or a functional abnormality such as persistent proteinuria. Otherwise a GFR of 60-89 is considered normal.

The suffix p may be added when there is proteinuria (PCR >100 mg/mmol), i.e. 2p means stage 2 with proteinuria

MONITORING OF CHRONIC KIDNEY DISEASE

Estimated GFR 30-60 ml/min or other evidence of kidney disease (Stage 1- 3 CKD)

Parameter	Stages 1, 2 and 3A	Stage 3B and all Patients with Proteinuria (PCR >100 mg/mmol)
Creatinine and potassium	Every 12 months	Every six months
Haemoglobin	If clinically indicated	Every six months
Dipstick Test for Proteinuria (or Urine PCR if positive ++ or more)		Every 12 months

- Meticulous control of blood pressure The threshold for initiation of treatment is 140/90 or 130/80 for those with urine PCR > 100 mg/mmol; target BP 130/80 if PCR < 100 or 125/75 for those with urine PCR > 100 mg/mmol.
- See hypertension guideline for advice on treatment of blood pressure..
- Anaemia should be investigated to exclude iron deficiency and other common causes. After these have been excluded refer to renal physician if Hb <10.5 g/dL.
- Abnormal corrected calcium or phosphate concentrations are indications for referral.

Estimated GFR < 30 ml/min (Stages 4 and 5 CKD)

Patients with stage 4 or 5 CKD should be referred to a nephrologist (see Referral Information). Exceptions include patients with a terminal illness, those who have already been investigated and for whom further investigation and management is inappropriate.

Parameter	
Creatinine, potassium & bicarbonate	Every 3 months
Haemoglobin	Every 3 months
Calcium	Every 6 months

Monitoring kidney function when prescribing ACEI or ARB

ACE Inhibitors and ARBs are indicated for patients with proteinuria, diabetic micro-albuminuria, left ventricular dysfunction and other evidence of vascular disease. They may be used in patients with reduced kidney function. Benefits have been demonstrated up to a creatinine of 500 micromole/l.

Serum creatinine and potassium concentrations should be checked prior to starting ACEI and/or ARBs, within 2 weeks of starting or increasing dose; and at annual intervals thereafter, or more frequently if indicated, according to kidney function.

A rise of serum creatinine concentration of > 30 % or fall in estimated GFR of > 25% after initiation or dose increase should prompt referral to a nephrologist.

If serum K⁺ > 6.0 mmol/l, repeat blood sample, to exclude haemolysis. If confirmed check diet (to exclude LoSalt), stop concomitant nephrotoxic drugs (e.g. NSAIDs), reduce or stop potassium-retaining diuretics (amiloride, triamterene, spironolactone).

Metformin

Metformin is excreted by the kidneys and may accumulate in renal failure. It is contra-indicated in advanced renal failure, although the risk is small. Consider alternative treatment when eGFR < 30 ml/min.

REFERRAL

Urgent

- Rapidly deteriorating kidney function/suspected acute renal failure.
- Newly detected GFR < 15 mL/min with symptoms (Stage 5 CKD).
- Accelerated or malignant phase hypertension.
- Severe hyperkalaemia (serum potassium > 7 mmol/L)
- Nephrotic syndrome
- Multisystem disease (e.g. SLE) with evidence of kidney disease (i.e. abnormal GFR, proteinuria or haematuria).

Routine

- Newly detected GFR < 30 ml/min (Stage 4 and 5 CKD) after consideration of age and co-morbidity.
- Proteinuria with urine protein:creatinine ratio (PCR) > 100 mg/mmol (irrespective of GFR)
- Rise in serum creatinine > 15% or fall in GFR > 4 ml/min over 12 months after confirmation with a second blood test.
- Acute deterioration in kidney function associated with use of ACEIs or ARBs (defined as a fall of GFR of >25% or 30% rise in serum creatinine concentration from pre-treatment level or level prior to latest increase in dosage).
- Haematuria + proteinuria (> 50 mg/mmol) (irrespective of GFR)
- Urologically unexplained macroscopic haematuria. (Macroscopic haematuria should be referred under 2 week rule to Urology for cystoscopy)
- Refractory hypertension (inadequate BP control, defined as BP > 150/90 mm Hg despite 4 drug combination therapy) plus suspicion of underlying kidney disease
- Anaemia (Hb <10.5g/dL) after exclusion of other causes of anaemia.
- Hyperkalaemia (serum potassium > 6.0 mmol/L on more than one sample) after exclusion of artefactual and treatable causes.
- Abnormal calcium or phosphate concentrations in patients with kidney disease.

Referral Information

Main kidney problem & how discovered

Past medical and drug history

Social circumstances

Current and past Blood Pressure measurements and treatment

Relevant physical examination e.g palpable bladder.

List of dates and results of serum creatinine to assess stability

Dipstick results and protein-creatinine ratio if positive

Result of renal ultrasound scan.

Further Advice

<http://www.renal.org/CKDguide/ckd.html>

A secure email helpline from the Preston Renal Unit will be available soon.