Speciality: Nephrology
Management of Chronic Kidney Disease in the Community

Annual monitoring of **renal function**, urine ACR and **blood pressure** in all at-risk patients. i.e.:-
1) Diabetes, hypertension, ischaemic heart disease, TIAs, peripheral vascular disease
2) Taking ACE-inhibitors or ARBs
3) Known history of hereditary renal disease
4) History of recurrent urinary sepsis

**eGFR <60**

**Clinical assessment.** Exclude new systemic illness, prostatism (bladder?), UTI, hypovolaemia (erect BP?).

**Drug review.** NSAIDS, Diuretics. (Stop metformin if eGFR <30)

- **eGFR 30-60 and declining (>10% over six months)** or
- **PCR 50 -100 or ACR 30-70**

Refer when eGFR<30 if patient might benefit from dialysis assessment. Otherwise manage as ‘higher risk’ where this is tolerated by patient.

**Manage as Higher Risk**

Maintain BP <140/85 (<130/80 if diabetic) using ACE-inhibitor or ARB first line (Recheck renal function 7-10 days after starting). Thiazide or CCB in patients over 75yrs without proteinuria

Maintain Hb >11g/dl. consider referral for IV iron or erythropoetin.

Immunise against influenza and pneumococcus

Manage other cardiovascular risk factors according to standard guidelines

Repeat monitoring 6 monthly

**eGFR 30-60 but stable. Urinalysis negative for protein**

**Manage as Lower Risk**

Maintain BP and other cardiovascular risk factors according to national guidelines

Annual monitoring
Speciality: Nephrology
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INTRODUCTION

There will be occasions when these guidelines do not suit the particular clinical circumstances. Where patients have poor quality of life, severe comorbidity or advanced age, the referring doctor will need to make a judgement as to how the recommendations within these guidelines are applied. We would encourage liaison with the nephrologist in marginal cases where referral may seem inappropriate or unnecessary. Although these guidelines are applicable to all patients, loss of renal function is expected as we age, so a given abnormality in a young adult may warrant more concern than in an elderly individual.

CONTACT DETAILS

A referral letter containing the information specified later in this guideline should be accompanied by a completed pro forma (see below). All referrals should be sent to the main unit at Queen Alexandra Hospital, even when the patient needs to be seen elsewhere.

Wessex Renal Unit
Queen Alexandra Hospital
Portsmouth PO6 3LY

Patients to be seen at St Richards Hospital or Bognor Regis War Memorial Hospital should be addressed to Dr Robert Lewis

For emergency referral, contact on-call registrar at Queen Alexandra Hospital

DEFINITIONS

eGFR: estimated GFR derived from a venous blood sample. The result may be accompanied by a correction factor applicable to ethnic minorities. In broad terms, the GFR can be read as “percentage renal function”.

PCR: (Protein Creatinine Ratio). This is tested on a single aliquot of urine, preferably an early morning sample, sent to biochemistry with an accompanying green form marked ‘urine PCR’. This quantifies proteinuria in patients with protein detectable on urine dipstick. In broad terms the result multiplied by a factor of 10 gives the amount of protein per day (ie PCR100mg/mmol = protein concentration of 1g/24hrs). 24hr urine tests for proteinuria are no longer necessary.

ACR; (albumin creatinine ratio). This is collected in the same way as for PCR. ACR is preferentially used to detect proteinuria in patients who are dipstick negative. It is particularly applicable in diabetes where the detection of microalbuminuria affects management decisions.

CLASSIFICATION OF CKD

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>eGFR&gt;90 mls/min with other evidence of kidney damage*</td>
</tr>
<tr>
<td>2</td>
<td>eGFR 60-89 mls/min with other evidence of kidney damage*</td>
</tr>
<tr>
<td>3A</td>
<td>eGFR 59-45 mls/min</td>
</tr>
<tr>
<td>3B</td>
<td>eGFR 44-30 mls/min</td>
</tr>
<tr>
<td>4</td>
<td>eGFR 15-29 mls/min</td>
</tr>
<tr>
<td>5</td>
<td>Established (end-stage) renal failure EGFR&lt;15 mls/min or on dialysis</td>
</tr>
</tbody>
</table>
The suffix P applied to any stage denotes the presence of proteinuria (ACR>30mg/mmol or PCR>50mg/mmol)

* 'other evidence of kidney damage’ may be one of the following:-

- persistent proteinuria (ACR>30mg/mmol or PCR>50mg/mmol)
- persistent haematuria (after exclusion of urological causes)
- structural abnormalities demonstrated by ultrasound etc

Patients with eGFR >60mls/min without these abnormalities should not be considered to have CKD and should therefore not be subjected to further investigation or management unless there is another reason for doing so.

### SCREENING FOR CKD

Screening for occult CKD (eGFR and urinalysis) should be undertaken at least annually in individuals: -

- with diabetes mellitus
- with longstanding hypertension
- with vascular disease (CHD, stroke, peripheral vascular disease)
- taking ACE-inhibitors, Angiotensin II blockers or diuretics
- People with neurogenic bladder or surgical urinary diversion

It should also form part of screening for vascular risk in 40-74yr olds

Occult renal disease may be detected by two means **Measurement of urine ACR (or PCR if dipstick shows proteinuria)**

**Blood test for eGFR**

**THE GUIDANCE IN THIS PAPER RELATES TO PATIENTS WITH THESE CONDITIONS.** Patients with abnormal urinalysis or low eGFR who do not have these conditions may need nephrological assessment to identify a diagnosis. Please see checklist for information required for referral.

### INVESTIGATION OF CKD

If a diagnosis of CKD is suspected, the following information must be assessed:-

1) up-to-date routine biochemistry (including glucose, calcium, phosphate and albumin),
2) results of previous tests to show the rate of rise of serum creatinine (or fall of eGFR)
3) urinalysis (including ACR or PCR)
4) blood pressure
5) current drug treatment

A renal ultrasound is indicated in the following circumstances:-

1) in men with a history suggesting prostatic symptoms
2) in patients with renal symptoms (loin pain, haematuria, recurrent UTI etc)
3) in patients with a past history of stone disease
4) in patients with a family history of renal disease
5) in patients that meet the criteria for referral to the renal unit
A single abnormal eGFR is not sufficient to establish whether or not a patient will benefit from intervention (this is particularly true in the elderly). It is recommended that eGFR is monitored for 3 months (and preferably 6 months) to establish if it is stable or not. The risk of progression to end stage kidney disease and of cardiovascular morbidity are greater when:-

- An initial eGFR is <60mls/min and serial eGFRs show a decline of more than 10% over 6 months
- Proteinuria is present (measured by ACR or PCR)

Measures to reduce progression of CKD and to minimise vascular risk should be instigated in patients meeting these conditions. In contrast, for patients with stable eGFR and no proteinuria, the value of intervention remains questionable and practitioners will need to take account of comorbidities and prognosis when deciding to intervene.

1) Drug review
When CKD is identified, the patient’s drug regime should be reviewed. NSAIDs should be avoided. Metformin should be replaced if eGFR <30. Detailed guidance of medicine management in renal impairment is to be found in appendix 3 of the BNF.

2) Lifestyle review
Advise on smoking, exercise and salt intake

3) Immunisation advice
Immunise against influenza and pneumococcus

4) Treat to targets
(i) Hypertension
When proteinuria is present (ACR>30mg/mmol, PCR>50mg/mmol) along with CKD and hypertension, ACE-inhibitors (or ARBs) should be used first line. Renal function should be monitored 7-10 days after initiating treatment. These drugs should be withdrawn if serum creatinine rises by 25% or more or if potassium rises above 5.5mmols/l.

Where significant proteinuria is not present, Management protocols for hypertension in CKD follow the same advice as in non-CKD individuals (see NICE hypertension guidance), although different criteria/targets apply (see below).

(ii) Anaemia
If Hb below 11g/dl, check haematinics including ferritin and percentage transferrin saturation and refer to the renal unit for consideration of either IV iron (if ferritin <200) or erythropoetin (if ferritin >200)

5) Maintain surveillance
Repeat eGFR, ACR and BP six monthly

**TARGETS FOR MANAGEMENT OF CKD**

<table>
<thead>
<tr>
<th>Hypertension:</th>
<th>Blood pressure should be maintained below 140/85 in all patients with CKD. A lower target of &lt;130/80 should be applied to CKD patients with diabetes or heavy proteinuria (ACR&gt;70mg/mmol, PCR &gt;100mg/mmol), where this can be attained without side effects.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin:</td>
<td>&gt;11g/dl</td>
</tr>
<tr>
<td>Other risk factors:</td>
<td>standard target and management as for non-CKD patients</td>
</tr>
</tbody>
</table>
**CRITERIA FOR REFERRAL**

**Urgent referral (phone call or fax)**
- Newly detected end-stage CKD (eGFR<15mls/min) with symptoms
- Newly detected abnormal renal function of recent onset or rapidly changing
- Newly detected abnormal renal function with blood and protein (ACR>70mg/mmol, PCR>100mg/mmol) in the urine

**Routine outpatient or advice (request by letter)**
- CKD with eGFR <30mls/min for 3 measurements over six months in a patient who may be suitable for renal replacement therapy
- Stable CKD with Persistent haematuria + proteinuria in the absence of UTI.
- Proteinuria with urine PCR >100 mg/mmol (ACR>70mg/mmol)
- Acute deterioration in kidney function (defined as a fall of eGFR of > 25%) associated with use of ACEIs or ARBs
- Refractory hypertension with evidence of underlying kidney disease
- Recurrent episodes of pulmonary oedema despite normal left ventricular function on echocardiography (so-called “flash pulmonary oedema”, usually associated with hypertension)
- Known or suspected hereditary kidney disease
- Microscopic haematuria with negative urological assessment

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**CHECKLIST OF INFORMATION REQUIRED FOR REFERRAL OR LETTER OF ADVICE**

The minimum data set for referral of a patient with CKD to a nephrologist should include:
- A full medical history including current drug treatment (and previous drug treatment, if any possibility of drug-associated kidney disease/dysfunction)
- Blood pressure readings from recent consultations
- The results of ACR or PCR measurements
- Up-to-date biochemical profile (to include calcium, phosphate, albumin, random glucose and lipids)
- FBC
- The results of a renal ultrasound scan if available.

**PLEASE COMPLETE AND SEND ATTACHED PRO FORMA WITH REFERRAL LETTER.**
Metformin may be essential to maintain good glycaemic control in some patients, and in others, its contribution may be minimal. Lactic acidosis has been reported in patients treated with Metformin but a systematic review of these reports and a randomised controlled trial has failed to establish a causal relationship. This further backed by a 2006 Cochrane Review, which concluded similarly. However, it is prudent to assume that the drug may contribute towards lactic acidosis which could develop in situation of tissue hypoxia or underperfusion (such as acute sepsis or low cardiac output).

1. The need for Metformin to maintain glycaemic control should be reviewed when eGFR is <30, and the patient should be referred to endocrinologist for risk stratification. Decision to continue Metformin may be taken in selected cases and these patients should remain under secondary care review.

2. Decision to continue the drug should be discussed with patients, and they should be advised to stop Metformin in any situation where they feel severely unwell. This advise should be reinforced on subsequent reviews.

3. Clinical development that might compromise tissue perfusion (such as diagnosis of congestive heart failure) should be communicated to diabetes specialist team promptly

4. Metformin should be stopped in all severely ill patients, and in patients suspected of being in prodromal stages of acute severe infection.

REFERENCES AND FURTHER READING:
1) NICE: management of CKD in adults (2008)
2) Chronic Kidney Disease; a guide for the non-specialist; R Lewis, MK Publishing Limited (2012) available from Amazon

GUIDELINE AUTHOR: Dr RJ Lewis, Consultant Nephrologist, Clinical Director of the Wessex Renal and Transplant Service

OTHERS INVOLVED: Dr J Quiney, Consultant Chemical Pathologist. St Richard’s Hospital, Western Sussex Hospitals NHS Trust. Local Referral and Management Guidelines Committee, St Richard’s Hospital Chichester, Western Sussex Hospitals NHS Trust.

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# KIDNEY DISEASE: REFERRAL FOR SPECIALIST ADVICE

(form to be attached to referral letter, please)

## Patient Details

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date of Birth:</th>
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<tbody>
<tr>
<td>Sex: M/F</td>
<td>NHS Number:</td>
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<tr>
<td>Hospital Number:</td>
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<table>
<thead>
<tr>
<th>Daytime Telephone:</th>
<th>Work Telephone</th>
<th>Mobile Telephone:</th>
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</thead>
<tbody>
<tr>
<td>Please indicate by ticking the appropriate box(es) which number(s) the patient can be contacted on during normal office hours.</td>
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<td></td>
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</table>

## GP Details

<table>
<thead>
<tr>
<th>GP Name:</th>
<th>Telephone Number:</th>
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<tr>
<td>Practice:</td>
<td>Fax Number:</td>
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## Date of Referral:

### Urine Abnormalities

<table>
<thead>
<tr>
<th>Urinalysis: blood</th>
<th>Date of test:</th>
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<tbody>
<tr>
<td>neg + ++ +++ (please ring)</td>
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<table>
<thead>
<tr>
<th>Urine ARC/PCR results:</th>
<th>Date of test:</th>
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<td></td>
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</table>

## Renal impairment

<table>
<thead>
<tr>
<th>Date when renal impairment first noted:</th>
<th>eGFR: Date of test:</th>
</tr>
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</table>

## Blood Pressure control

<table>
<thead>
<tr>
<th>Last four BP readings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date (M/Y)</td>
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</table>

<table>
<thead>
<tr>
<th>Reading</th>
</tr>
</thead>
</table>

## Drug regime

Current drug list attached (tick)

In referral letter, please give account of any drugs that may have affected renal impairment that have recently been stopped. Also, any antihypertensive drugs that have been used in the past but not tolerated, with reasons for stopping.

## Ultrasound

Not indicated according to guidelines yes/no

<table>
<thead>
<tr>
<th>Indication:</th>
<th>yes/no</th>
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<tbody>
<tr>
<td>urinary symptoms</td>
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<tr>
<td>refractory hypertension</td>
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<tr>
<td>eGFR falling faster than expected</td>
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</table>

<table>
<thead>
<tr>
<th>Result:</th>
</tr>
</thead>
<tbody>
<tr>
<td>attached (tick)</td>
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</table>