

NEWSLETTER

Supporting the Derbyshire Health Community

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JAPC Update

The Joint Area Prescribing Committee (JAPC) is a countywide group covering Derbyshire County PCT and Derby City PCT. It provides recommendations on drugs and medicines management issues.

RED drugs are those where prescribing responsibility would normally lie with a hospital consultant or a specialist. AMBER drugs are those that although usually initiated within a hospital setting, could appropriately become the responsibility of the GP. This would normally be under a shared care agreement. GREEN drugs are regarded as routine for primary care prescribing. BROWN drugs are those that JAPC does not recommend for use (DARK BROWN) or only in restricted circumstances (LIGHT BROWN) due to lack of data on safety, effectiveness, and/or cost-effectiveness.

The most recent updates are in the table below:

Drug	Date considered	Decision
Colesevalem	February 2008	DARK BROWN
Hyaluronic acid injection	February 2008	RED
Apraclonidine eye drops	January 2008	RED
Cabergoline (hyperprolactinaemia only)	January 2008	LIGHT BROWN
Co-proxamol (unlicensed)	January 2008	DARK BROWN
Ezetimibe (as per NICE guidance only)	January 2008	LIGHT BROWN
Fostair	January 2008	LIGHT BROWN
Hedrin lotion	January 2008	GREEN
Omalizumab	January 2008	RED
Sativex spray (unlicensed)	January 2008	DARK BROWN
Erdosteine	December 2007	DARK BROWN
Exenatide	December 2007	LIGHT BROWN

More on ezetimibe

As you know, this is a black-triangle drug with no patient-orientated outcome evidence, so we should be wary of using it. Since the article in last month's newsletter some new evidence has come to light and it looks like ezetimibe doesn't enhance the effect of statins.

In late January, BMJ news reported that the manufacturers of the cholesterol lowering drug ezetimibe released results of a surrogate end point study showing it was not superior to using a statin alone, but only following a Congressional inquiry in the United States. The inquiry was set up to investigate why the results of the study had not been published 2 years after completion and is still ongoing.

The study (ENHANCE trial) measured the thickness of carotid artery intima media as the primary end point in patients with heterozygous familial hypercholesterolemia. Treatment with simvastatin 80mg daily (n=360) was

compared to simvastatin 80mg plus ezetimibe 10mg daily (n = 356). No statistically significant difference was observed in the primary end point with plaque progression worse in the ezetimibe arm. It is reported, however, that ezetimibe did cause an additional lowering of cholesterol (although this was not a primary endpoint).

According to BMJ news, the Congressional investigation into the delayed publication of the ENHANCE trial results is now being followed by another Congressional investigation that will examine claims made by the companies in their recent advertising campaign. The companies involved have taken out full page advertisements in major US news papers such as the New York Times and the Wall Street Journal to allay any fears that patients may have following media coverage of this story in the US.

The controversy caused by the companies' announcement has led researchers to question the use of surrogate markers in trials. ENHANCE is a surrogate endpoint study and was not powered nor designed to assess cardiovascular clinical event outcomes. The approval of ezetimibe was based on its ability to reduce LDL cholesterol, rather than a reduction in clinically relevant outcome measures.

Clinicians need to be aware of this negative study for ezetimibe.

OTC medicines for acute cough

There is no good evidence for the use of over-the-counter (OTC) medications for acute cough in children and adults, according to the results of a Cochrane systematic review.¹ Twenty five randomised controlled trials that compared oral OTC cough preparations with placebo in 616 children and 2,876 adults with acute cough were included in the analysis. Studies that investigated OTC medicines for chronic cough (more than three weeks' duration), cough due to underlying respiratory disease or artificially induced cough (through inhalation of chemicals) were excluded.

The results of studies in adults were as follows:

- Six trials compared antitussives with placebo and had variable results.
- Two trials compared the expectorant, guaifenesin with placebo; one indicated significant benefit whilst the other did not.
- One trial found that a mucolytic reduced cough frequency and symptom scores.
- Two studies examined antihistamine-decongestant combinations and found conflicting results.
- Three studies compared other combinations of drugs with placebo and indicated some benefit in reducing cough symptoms.
- Three trials found antihistamines were no more effective than placebo in relieving cough symptoms.

The results of studies in children were as follows:

- Antitussives (two studies), antihistamines (two studies), antihistamine-decongestant combinations (two studies) and antitussive/bronchodilator combinations (one study) were no more effective than placebo.
- No studies using expectorants met the inclusion criteria.
- The results of one trial favoured active treatment with mucolytics over placebo.
- One trial tested two paediatric cough syrups and both preparations showed a 'satisfactory response' in 46% and 56% of children compared to 21% of children in the placebo group.

The authors conclude that there is no good evidence for or against the effectiveness of OTC medicines in acute cough. The results of this review have to be interpreted with caution due to differences in study characteristics and quality. Studies often showed conflicting results with uncertainty regarding clinical relevance. Higher quality evidence is needed to determine the effectiveness of self-care treatments for acute cough.

The US Food and Drug Administration has recently issued a Public Health Advisory note for parents and caregivers, recommending that OTC cough and cold products should not be used to treat infants and children less than two years of age because serious and potentially life-threatening side effects can occur².

A small RCT suggests that honey may be effective for cough suppression in children³. Children aged 2 years to 18 years with cough attributed to upper respiratory infections of less than 7 days' duration were randomly assigned to receive honey (n = 35), specially compounded honey-flavoured/honey-scented dextromethorphan (n = 33), or no treatment (n = 37). The honey and dextromethorphan were administered 30 minutes before bedtime. The honey was dosed by age: children aged 2 years to 5 years received 8.5 mg (1/2 teaspoon), 6- to 11-year-olds received 17 mg (1 teaspoon), and 12- to 18-year-olds received 34 mg (2 teaspoons).

Only children whose coughs were moderately disruptive were eligible to participate. The researchers used multiple exclusions to limit this to viral respiratory infections. The authors main justification for using a no treatment arm instead of a placebo group was that in a previous study they found dextromethorphan to be equivalent to placebo. Although the no treatment group obviously knew what they were getting, the other 2 groups were unaware of their treatment.

The parents of the children provided ratings of cough severity, effect on sleep, and so forth at baseline and the next day. Only 81% of the children enrolled completed the study. Every treatment group improved by the second night, even those receiving no treatment. Children in the 2 treatment groups had slightly greater reductions in cough frequency than untreated children. Children receiving honey had slightly greater improvements in cough severity and in sleep disruption. Five parents reported hyperactivity, nervousness, and insomnia in children treated with honey compared with two parents of those treated with dextromethorphan, and none of those receiving no treatment.

The InfoPOEMs bottom line is 'A single dose of honey is effective at decreasing cough severity and sleep disruption in children with cough due to uncomplicated upper respiratory infections. Please remember that honey should never be given to infants because of the risk of botulism.'

1. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No. CD001831
2. www.fda.gov/cder/drug/advisory/cough_cold_2008.htm
3. Arch Pediatr Adolesc Med 2007; 161: 1140-6

LABAs for asthma: review by MHRA

The MHRA has published the findings of its review of LABAs (salmeterol and formoterol) in asthma. The MHRA review concluded that:

- Epidemiological data show that since the introduction of LABAs, there has been a **decrease** in asthma-related hospitalisations in adolescents and a **decrease** in asthma-related mortality in all ages.
- Data from RCTs do not suggest a similar safety concern to that shown in postmarketing studies, probably because of more consistent use of concomitant inhaled corticosteroids in randomised controlled settings. The data **support the use of LABAs in conjunction with inhaled corticosteroids** in the treatment of moderate to severe asthma consistent with national guidance on the management of asthma in children and adults, published jointly by SIGN and the BTS.
- To aid compliance with the concomitant use of inhaled corticosteroids and LABAs, a combination inhaler should be used when appropriate.

The MHRA states that further epidemiological studies are underway to assess the relation between adverse outcomes and use of LABAs, the results of which are expected before the end of 2008. The MHRA is also reviewing the role of LABAs in the treatment of asthma in children younger than age 12 years. We have recently noted that, in an internal memorandum, drug safety staff at the FDA in the USA have commented that salmeterol "may have an unfavourable risk benefit ratio in the treatment of pediatric asthma" and recommend a "more thoroughgoing, formal risk-benefit analysis of salmeterol" in this indication.

How does this fit with current guidance?

LABAs clearly have an important place in therapy, but it is important that they are used correctly. The current advice from the Commission on Human Medicines (CHM) is that salmeterol and formoterol should:

- Be added to therapy **only** if regular use of standard-dose inhaled steroids (*standard beclometasone 800mcg/day adults and 400mcg/day children*) has failed to control asthma adequately.
- **Not be initiated in patients with rapidly deteriorating asthma**
- Be introduced at a low dose and the effect properly monitored before an increase in dose is considered.
- Be **discontinued** in the absence of benefit
- Be reviewed as clinically appropriate: stepping down therapy should be considered when good long term asthma control has been achieved.

Patients should be asked to report any deterioration in symptoms following initiation of a LABA.

This is entirely consistent with the national guidance on the management of asthma in children and adults. This was last updated in November 2007. There is a strong emphasis in the guidance on achieving control of asthma symptoms by using appropriate treatment, but also on stepping down to the minimum level of treatment required for control and a good quality of life.

Drug safety update

This can be found at www.mhra.gov.uk/drugsafetyupdate. These are some key items from the February issue.

Statins: *Class effects identified*

Several additional side-effects – sleep disturbances, memory loss, sexual dysfunction, depression, and interstitial lung disease – have been recognised with statins. The product information for the class as a whole is being updated.

New advice for healthcare professionals is as follows:

- Patients should be made aware that treatment with any statin may sometimes be associated with depression, sleep disturbances, memory loss, and sexual dysfunction.
- Statins may very rarely be associated with interstitial lung disease. Patients should seek help from their doctor if they develop presenting features of interstitial lung disease such as dyspnoea, non-productive cough, and deterioration in general health (e.g. fatigue, weight loss, and fever).

Varenicline: *Safety update*

Depression has been reported in patients using varenicline who are trying to stop smoking, and symptoms of depression may include suicidal thoughts and behaviour. Patients who are taking varenicline who develop suicidal thoughts should stop their treatment and contact their doctor immediately.

Up to December 14, 2007, 1241 reports of *suspected* adverse reactions have been received via the Yellow Card scheme in the UK. The table shows reactions most commonly reported through the scheme. It is important to note that the *suspected* reactions are not necessarily caused by the drug and may relate to other factors such as nicotine withdrawal, other illnesses, or other medicines taken concurrently by the patient.

Reported reaction	Number of reports	Reported reaction	Number of reports
Nausea	327	Somnolence	40
Headache	125	Suicidal ideation	36
Vomiting	119	Diarrhoea	35
Dizziness	77	Nightmare	35
Abdominal pain	69	Dyspnoea	34
Depression	86	Depressed mood	33
Abnormal dreams	72	Chest pain	31
Insomnia	63	Arthralgia	31
Fatigue	57	Increased sweating	31
Malaise	51	Anxiety	30
Rash	40	Pruritus	30
Sleep disorder	40		

Note: many reports contain more than one of the above reactions. Therefore the sum of the number of reports in this table may exceed the total number of reports.

The most commonly reported adverse effects seen during the initial clinical trials of varenicline were nausea (2.7% vs 0.6% for placebo), headache (0.6% vs 1.0% for placebo), insomnia (1.3% vs 1.2% for placebo), and abnormal dreams (0.2% vs 0.2% for placebo).

Risk of depression, including suicidal ideation

Recently, concerns have arisen about reports of suicidal thoughts and behaviour reported in association with the use of varenicline, and these data have been subject to Europe-wide review. After the most recent consideration of available data, product information for doctors and patients is being updated to contain warnings that depression has been reported in patients using varenicline who are trying to stop smoking, and that symptoms of depression may include suicidal thoughts and behaviour.

Combination with other smoking-cessation therapies

The safety and efficacy of varenicline in combination with other smoking-cessation therapies have not been studied. In a short-term (12-day) study of varenicline use with transdermal nicotine-replacement therapy, the incidence of nausea, headache, vomiting, dizziness, dyspepsia, and fatigue was higher for the combination than for nicotine-replacement therapy alone.

Prescribing advice:

- Smoking cessation, with or without pharmacotherapy, may be associated with an exacerbation of underlying psychiatric illness, including depression. Care should be taken in such patients, who should be advised of this risk.
- Patients should be made aware of the possibility that trying to stop smoking might cause symptoms of depression.
- Patients who are taking varenicline who develop suicidal thoughts should stop their treatment and contact their doctor immediately.

Reporting of suspected adverse reactions to varenicline

As with all new drugs, the safety of varenicline remains under close review. Please continue to report all suspected adverse reactions to the MHRA and the Commission on Human Medicines via the Yellow Card scheme (see www.yellowcard.gov.uk).

Adverse events with intensive blood glucose-lowering

Recently the National Heart Lung and Blood Institute (NHLBI) in the USA announced that it has stopped the intensive blood-glucose-lowering arm of a large type 2 diabetes trial due to findings that **intensively lowering blood glucose below current US recommended targets increased the risk of death** compared with a less-intensive standard treatment strategy.

People with type 2 diabetes are at increased risk of cardiovascular disease (CVD) events compared to similar people without diabetes. The ACCORD study is a large, ongoing trial looking at the effects of intensive blood glucose lowering, blood pressure lowering and lipid lowering in people with type 2 diabetes at high risk of CVD events. The trial started in 2001 and was scheduled to follow up participants for four to eight years.

All 10,251 participants were randomised to a therapeutic strategy that targeted an HbA1c of <6.0% or a strategy that targeted an HbA1c of 7.0% to 7.9% (with the expectation of achieving a median level of 7.5%). This was to be achieved through diet and lifestyle measures and drug therapy including metformin, sulphonylureas, glitazones, acarbose, meglitinides, and insulin.

After about 4 years of follow-up, people in the intensive treatment arm had a 27% higher relative risk of dying than those in the standard treatment arm. This is a number needed to harm (NNH) of 95 and equates to 3 extra deaths per 1,000 participants per year, over an average of 4 years of treatment. The increased risk between the two groups outweighed potential benefits of the intensive treatment strategy on non-fatal events. Accordingly, the NHLBI made the decision to stop this intensive treatment approach of the trial. Although there were fewer non-fatal CVD events in the intensive treatment group, it appeared that, if a heart attack did occur, it was more likely to be fatal. In addition, the intensive treatment group had more unexpected sudden deaths, even without a clear heart attack.

The NPCi blog¹ makes the following comments:

“The currently available evidence suggests that for people with type 2 Diabetes Mellitus, after controlling blood glucose to the extent sufficient to control symptoms (probably using diet and lifestyle measures along with metformin), managing other CVD risk factors should be the next priority. This may include encouraging smokers to stop smoking, controlling blood pressure, adding a statin (ideally simvastatin 40 mg/day) and adding aspirin once their blood pressure is controlled. The best available evidence suggests that such measures are likely to achieve far more with regard to reducing the risk of macrovascular and microvascular complications than tight blood glucose control. In our experience, some patients and practitioners become preoccupied with glycaemic control to the neglect of these other measures. You can find more information on the type 2 diabetes floor of NPCi.

Patients with type 2 diabetes should not adjust their treatment without discussing this with their doctor, pharmacist or specialist nurse. However, some patients and some health professionals looking after people with type 2 diabetes may need to review their priorities in managing diabetes carefully.”

These are comments from Dr Robinson, Consultant Diabetologist at Chesterfield Royal Hospital:

“Thanks for highlighting this. We are seeing quite a few elderly patients, many of whom have insulin treated Type 2 diabetes and have been on insulin a number of years who are coming into hospital with episodes of significant hypoglycaemia. In a couple of cases the associated collapse has resulted in fractures of limbs. Also we are seeing patients with loss of hypoglycaemia awareness due to overtight control, and a number of

patients attending with neurological problems related to hypoglycaemia such as slurred speech, fitting, and limb weakness.

A HbA1c of less than 6 is probably only appropriate in a patient on diet treatment. In any patient on insulin, especially of long duration, the risk of significant hypoglycaemia (or at least recurrent mild hypoglycaemia is simply too high). Please remember that severe episodes of hypoglycaemia are associated with significant morbidity. I can think of a couple of my younger patients (although with type 1 DM) who have developed significant brain injury related to hypoglycaemia causing a marked reduction in their IQ). Any physician treating patients with diabetes should ask about hypoglycaemia at each visit (especially those patients treated with insulin). Appropriate glycaemic targets should be set individually.”

1. www.npci.org.uk/blog/?p=64

Obtaining Zoladex (goserelin)

Goserelin has been the formulary choice gonadorelin analogue of the urologists at Chesterfield Royal Hospital FT for a number of years for cost-effectiveness reasons. We understand that AstraZeneca are limiting the wholesalers who can supply their products. GP practices who order Zoladex for personal administration may need to set up new accounts with either Pharmaceuticals Direct (0845 0948866) or Phoenix (01928 750551).

More on statins

Treating elderly patients who have coronary heart disease (CHD) with a statin reduces all cause mortality, as well as fatal and non-fatal cardiovascular events according to a meta-analysis of clinical trial data.¹ The authors of the analysis comment that statins may be underused in the elderly because the evidence does not consistently show an overall benefit. The aim of their review and analysis was to determine whether the clinical trial data showed a consistent effect on all-cause mortality in this age group. They carried out a very comprehensive literature search for randomised controlled trials that involved statin treatment in patients with CHD at the time of randomisation, and included at least 50 patients aged 65 and over, and had at least six months follow-up, and all-cause mortality, CHD mortality, nonfatal MI, need for revascularisation, or stroke reported as an outcome measure. Unpublished data on elderly subgroups was obtained where possible. Hierarchical Bayesian modelling was used to account for the significant differences between studies.

The initial literature search located 729 papers of which 66 were potentially relevant and evaluated further. Of these, nine met the predetermined selection criteria and reported all the outcomes studied; for a number of these, previously unpublished subgroup data was obtained from the original study authors. The total number of elderly patients included in the nine studies was 19,569, ranging from 94 to 10,697 (in HPS), with a mean weighted follow-up of 4.9 years. About a third of the patients in HPS were enrolled on the basis of non-coronary vascular disease, and the analysis was thus carried out with and without the inclusion of this study: this did not materially affect the results.

Analysis found that statin treatment was associated with a relative risk reduction in all-cause mortality of 22% (pooled rates 15.6% vs. 18.7%): calculated number needed to treat (NNT) over five years to save one life was 28 (95% credible interval 15 to 56). There were similar relative risk reductions for the other outcomes studied (CHD mortality 30%, NNT 34; non-fatal MI 26%, NNT 38; stroke 25%, NNT 58).

Based on their analysis, the authors conclude that statin treatment in elderly patients with CHD reduces all-cause mortality, and that the effect is greater than previously expected. Sub-group analysis by age indicted that the benefit was greater with increasing age, with the relative risk reduction for those aged 80 to 97 being 50%. Women accounted for about a quarter of the study population, and there appeared to be no gender specific differences in benefits.

A recent editorial discusses strategies for prescribing statins.² The authors conclude that evidence supports prescribing a standard dose without further testing or dose adjustment. “Despite the results of recent high dose statin trials, it is unclear whether possible benefit really translates into clinical practice. All we can say is that everyone at high risk of cardiovascular events should be offered a standard dose of statin. Anyone with manifest disease would be eligible, irrespective of their initial cholesterol concentration.” Letters have been published supporting this recommendation.³ As one says “treat to targets benefits no one.”

The Statin policy recommends that all people with CHD, CVD or PVD, and those with diabetes aged 40+, should be offered simvastatin 40mg daily, without the need to monitor cholesterol levels. The Statin LES is available to all practices to support implementation of the policy.

1. J Am Coll Cardiol 2008; 51:37-45
2. BMJ 2008; 336:288-9
3. BMJ 2008; 336:406

Patellar taping for chronic knee pain

Therapeutic taping and bracing of the patella (the bone that forms the kneecap) are sometimes used for people with knee pain, e.g. as a result of osteoarthritis. A recent study systematically reviewed the literature and carried out meta-analyses of the effects of both interventions to identify if there was clinical evidence of benefits in reducing pain relative to each other, to no tape/brace or sham effects, and when used in different ways.¹

This study claims to be the first detailed analysis of these two interventions. It identified that there was evidence that tape applied to exert a medially-directed force to the patella produces a clinically meaningful change in chronic pain. However, evidence to support the use of patella bracing was limited and disputable.

The NPCi blog on this study² concludes:

“This study provides reasonable evidence that medially-directed knee taping can reduce chronic knee pain. Further research is needed to establish whether other forms of knee taping or bracing have any benefits in reducing knee pain.”

It recommends the following action points:

“Medially-directed knee taping is a simple, inexpensive and harmless therapy, which appears to produce clinically meaningful pain relief in some patients. It therefore deserves serious consideration as an option for those suffering from chronic knee pain, alongside, or in addition to, analgesics and other non-drug measures (e.g. exercise, weight loss, and use of canes). However, to ensure that optimal benefit is obtained, the knee taping needs to be done by a person with appropriate training (normally a physiotherapist).”

1. Arthritis Rheum 2008; 59:73-83
2. www.npci.org.uk/blog/?p=72

Antibiotic exposure and risk of MRSA isolation

Recent exposure to any antibiotic almost doubles the risk of isolating methicillin-resistant *Staphylococcus aureus* (MRSA) from patients, with the greatest increase in risk associated with recent fluoroquinolone exposure according to the results of a recent meta-analysis.

35 case-control studies, 34 cohort studies and seven prevalence surveys that presented data on the relationship between antimicrobial use and colonisation or infection with MRSA in adults were included in the analysis. Populations studied were community (34%), nosocomial or healthcare-associated (46%), or mixed (20%). Time to previous antibiotic exposure ranged from seven to 1,080 days (mean 126 days [SD 184]). The primary outcome was MRSA isolation.

Overall, 4,365 patients with MRSA and 19,865 controls were assessed. The relative risk of MRSA isolation (infection or colonisation) for patients previously exposed to antibiotics was 1.8; [95% CI 1.7 to 1.9]; p<0.001. The relative risk for single classes of antibiotics was:

- Fluoroquinolone 3; [2.5 to 3.5]
- Glycopeptides 2.9; [2.4 to 3.5]
- Cephalosporins 2.2; [1.7 to 2.9]
- Beta-lactams 1.9; [1.7 to 2.2]

The authors conclude that their results show a clear association between exposure to antibiotics and MRSA isolation.

1. J Antimicrob Chemother 2008; 61:26-38

Top Tips in 2 minutes: Chronic kidney disease

From the British Journal of General Practice, January 2008 edition:

Why: *Chronic kidney disease (CKD):* 'Been around forever, but important now because of eGFR and the QOF.'

How: *Example:* A laboratory result comes back on one of your patients, an 80-year-old woman, showing that creatinine is 125 µmol/l, which doesn't seem too bad, but eGFR is calculated as 38 ml/min, CKD stage 3

Proceed as follows:

1. Remember that CKD stage 3 affects 3-4% of the population and 30% of people over 70 years, most of whom do not need referral to renal services.
2. Do not tell the woman and her family that she has CKD: say that her kidney function is slightly reduced, as it is in one-third of older patients.
3. Check if creatinine has been measured before: if so, is it stable? If not, repeat in near future.
4. History – previous kidney problems: urinary tract infection, haematuria, stones, protein in urine (pregnancies, medicals), episodes of swelling, and family.
5. History – cardiovascular risk factors.
6. Examination – is the bladder palpable (especially elderly men)? If it is – organise urgent ultrasound of urinary tract and discuss with urological services.
7. Examination – check blood pressure.

What next and when: CKD stage defined by eGFR

Stage	eGFR (ml/min)	Comment
1	>90	Must have other evidence of kidney disease
2	60-90	Must have other evidence of kidney disease
3	30-60	
4	15-30	
5	<15	

CKD stages 1 and 2

1. Few patients with CKD 1 or 2 require referral to renal services.
2. Urine – stick test for blood and protein; quantitate proteinuria with albumin creatinine ratio (ACR). Refer to renal services if no blood and ACR >65 mg/mmol or blood and ACR >30 mg/mmol.
3. In general practice – annual monitoring of creatinine, potassium, cholesterol, and ACR.
4. Blood pressure control – '130/80 mmHg maximum, or 125/75 mmHg in patients with urinary ACR >65 mg/mmol (approximately equivalent to ≥ 2 on dipstick test)' is the ideal ... but common sense must prevail. Quote from: <http://www.renal.org/eGFR/eguide.html> (also cited below)

CKD stage 3

1. Not all patients with CKD3 require referral to renal services.
2. Urine – stick test for blood and protein; quantitate proteinuria with protein or albumin creatinine ratio (P/ACR). Refer to renal services if no blood and PCR >100 mg/mmol/ACR >65 mg/mmol or blood and PCR >45 mg/mmol/ACR >30mg/mmol.
3. Other blood tests: calcium, phosphate, haemoglobin, and cholesterol.
4. Action – stop poisons (NSAIDs).
5. Blood pressure control – as above.
6. Monitoring – check creatinine and (1) and (2) every 6-12 months and consider referral to renal services if reaches CKD stage 4.
7. May need treatment with phosphate binders, vitamin D analogues, iron, epo – discuss with renal services.
8. Immunisation – influenza and pneumococcal.

CKD stages 4 and 5

As for stage 3, except (in contrast to Stage 3) please refer to or discuss with renal services, except in patients in whom:

1. All appropriate investigations have been performed and there is an agreed and understood care pathway.
2. Severe renal impairment is part of another terminal illness.
3. Further investigation and management is clearly inappropriate.

Patient information: Patient UK Chronic Kidney Disease – A Summary <http://www.patient.co.uk/showdoc/27001285/>
Patient leaflet on CKD from RCGP <http://www.renal.org/eGFR/resources/PatientCKDinfJan2007.pdf>

Web links/references: The short CKD eGuide <http://www.renal.org/eGFR/eguide.html> The Infirmiry of Edinburgh Renal Unit – really helpful GP guide <http://renux.dmed.ed.ac.uk/EdREN/Unitbits/GPinfo.html>

Who are you: Dr John Firth, Director of Renal Services, Addenbrookes Hospital, Cambridge.

Date: October 2007