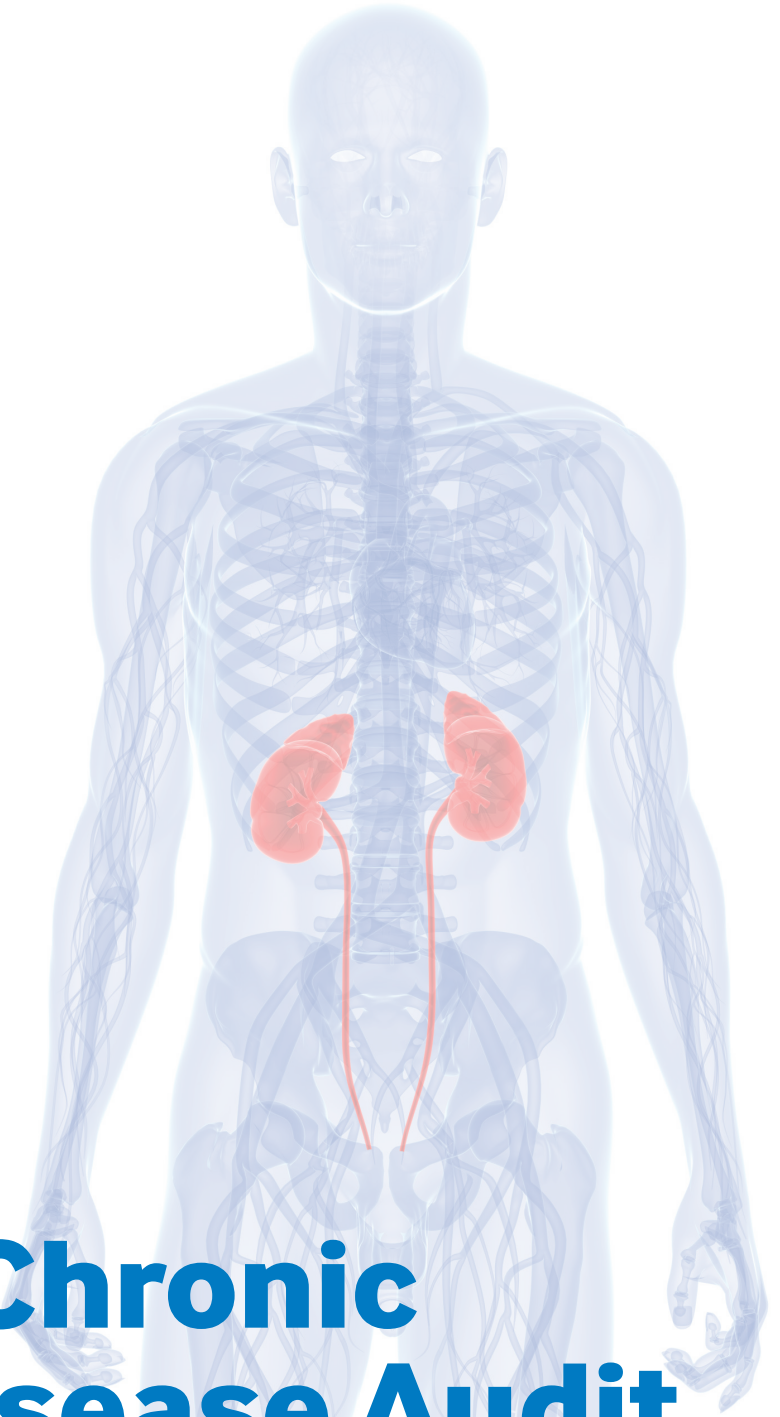


A quality improvement programme  
for chronic kidney disease

National  
**CKDAudit**



# National Chronic Kidney Disease Audit

// **National Report: Part 2** December 2017

Commissioned by:



Delivered by:



# // Foreword by Fiona Loud



## CKD Audit Part 2 – Mind the gap

The CKD Audit, the first of its kind in England and Wales, has some extremely relevant recommendations for patients and practitioners, showing that there is too much variation in the way CKD care is administered and that this has an adverse effect on our outcomes. We hope that by highlighting good practice more attention will be given to improving the care of people with CKD and to prevent or delay common complications such as heart disease and less common ones like kidney failure. Whilst many with CKD will have other problems and may be older, recognising the presence of CKD will deliver improved quality of care. The audit estimated a prevalence of 5.8% of the population having moderate to advanced CKD, with an average of 4.2% of the population being identified and recorded. The audit points to people in the gap having the worst outcomes.

From the patient viewpoint, knowing that you have chronic kidney disease gives a chance to do something about it; if your doctor knows (and lets you know) that you have CKD it makes it much more likely you will receive the information, advice and check-ups you need.

And if, as part of good, patient-centred care, a record of your condition(s), the medications, vaccinations and advice you are given is appropriately recorded this will prompt follow-up care.

Many with CKD do receive this care from their doctors, and it is supported by the recent CKD quality standards issued by NICE <https://www.nice.org.uk/guidance/qs5> which state clearly the importance of managing blood pressure and offering statins. However the Audit puts this into context, with data showing that a) recording or coding that people have CKD is not consistently implemented and b) that people with CKD which is not recorded (and therefore not known to all those who are caring for that patient) are more likely to have heart attacks and strokes, more likely to be admitted to hospital, more likely to develop Acute Kidney Injury and more likely to die than those who have been identified in advance.

The 1st audit showed that opportunities to identify and offer interventions to patients are missed in 673,000 people, or 1.2% of the population in England and Wales, this report shows the human cost. We know that primary care is stretched, we know that the NHS has cost pressures but it makes sense to use the information and opportunities that exist to look to do better for people with CKD. As we also know that **patients who are not coded for CKD are twice as likely to have an emergency hospital admission as patients who are coded for CKD. It is time to take action now.**

We are grateful to the CKD audit team for their hard work in delivering clear evidence to prompt improvement.

**Fiona Loud**

**Policy Director Kidney Care UK (formerly known as the British Kidney Patient Association).**  
[www.kidneycareuk.org](http://www.kidneycareuk.org)

# // Foreword

**Dr Matt Kearney, GP and National Clinical Director for Cardiovascular Disease Prevention, NHS England and Public Health England.**

**Dr Kathryn Griffith previously RCGP Clinical Champion for Kidney Care and Chair of the National CKD Audit Project Board.**

As Primary Care Doctors we welcome this second report of the HQIP national audit of chronic kidney disease (CKD) which focuses on kidney disease management in primary care. The majority of people with CKD will be cared for entirely by their general practice teams and this audit is the largest study of current practice in the world.

The detection and management of CKD is key to the prevention of cardiovascular disease (CVD), along with the detection and management of high blood pressure and diabetes mellitus, both important causes of CKD itself. CKD is also a major risk factor for Acute Kidney Injury (AKI). There is a robust evidence base that treatment of CKD is effective in reducing cardiovascular events and AKI.

The inclusion of CKD in the Quality and Outcome Framework did stimulate significant improvements in care, although for some clinicians there was initial confusion as to the significance of kidney blood tests, and concern about risks of over diagnosis and treatment.

The core value of audit is that it identifies good practice, evidence of suboptimal care and opportunities for improvement. The first report on the CKD Audit in January 2017 highlighted that there is wide variation in coding with some practices having large numbers of people with abnormal kidney function who have not been formally diagnosed with CKD. Without coding people are at high risk of not being monitored and receiving appropriate follow up, with potential increased risk of poor outcomes.

This second report examines outcomes for people with CKD. It shows that people with uncoded CKD have double the mortality rates of people whose CKD is coded in general practice. And there is a significant increase in unplanned hospital admissions and in rates of AKI.

Further work is needed to confirm whether there is a causal relationship between coding CKD in primary care and outcomes in hospital settings. Nevertheless, where the audit identifies local variation in coding, this should stimulate important questions about quality of care and outcomes for local clinicians and commissioners, and examination of systems for coding and follow up.

# // Executive summary

## About Chronic Kidney Disease

Chronic Kidney Disease (CKD) is a long-term irreversible condition where the kidneys don't work as well as they should. CKD can be caused by many diseases but it is often found in patients who also have diabetes and high blood pressure. Moderate to severe CKD affects approximately 5.5% of adults and is more common in older people<sup>1</sup>.

CKD is clinically important because it contributes to cardiovascular disease (CVD) and makes someone more susceptible to sudden worsening of kidney function (known as acute kidney injury or AKI) at times when patients are unwell for other reasons. People with more severe CKD have an increased risk of hospital admission and death<sup>2</sup>. Although only a small number of cases progress to end stage renal disease requiring dialysis (or, if possible, a kidney transplant), this reduces quality of life, is costly and difficult for patients and their families, and very costly for the health economy.

Most people with CKD do not have symptoms until it reaches an advanced stage, near to end stage failure. It is only detected by performing tests on blood and urine:

- The ability of the kidneys to 'clean the blood' can be assessed by measuring the levels of a waste product called creatinine in a patient's blood. The creatinine level can be used to estimate the rate at which the kidneys filter blood (the 'estimated glomerular filtration rate' or eGFR).
- Kidney damage can also be detected by measuring the leakage of a protein (albumin) into the urine, using a measure called the urinary albumin to creatinine ratio (or uACR).

Using a combination of blood and urine test results, the severity of CKD can be classified into stages 1-5. This report concentrates on moderate and severe CKD stages 3-5 – where the eGFR has fallen below a value of 60ml/min/1.73m<sup>2</sup>.

For patients identified with CKD in primary care, it is advised that GPs record the correct classification (or 'CKD Read Code') for the stage of disease, and add those details to the patient's electronic health record. Coding for CKD is currently incentivised in England by the Quality Outcomes Framework.

Improving identification and coding in primary care delivers benefits for people with CKD<sup>3,4</sup>:

- Personalised information and education about CKD
- Opportunities to make lifestyle changes that will help maintain kidney health
- Regular review of kidney function (through creating patient lists for practice review using the CKD Read Codes)
- Improved management of blood pressure and cardiovascular risk
- Safer prescribing of medication (prescribing software may require a CKD Read code to recognise that a patient has reduced kidney function)
- Specialist care if and when necessary

This audit was designed to help GPs achieve these goals and the findings from the audit have been published as two reports.

# The National Chronic Kidney Disease Audit

This National CKD Audit was commissioned by the Healthcare Quality Improvement Partnership (HQIP)\* as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP), and was delivered by Informatica Systems in collaboration with London School of Hygiene & Tropical Medicine, University College London and Queen Mary (University of London). This national CKD audit has been supported throughout the planning and implementation stages by patient and patient charity representatives who have contributed fully as members of the audit board.

Originally designed to achieve full national coverage of general practices across England and Wales, the audit encountered technical challenges accessing primary care data. The audit reports the processes and care of outcomes for patients who were seen in primary care between April 2015 and June 2016. This report includes data linked from 1,005 practices representing approximately 75% of the Welsh practice population and 10% of the practice population in England. It has produced the largest sample of patients with CKD in primary care globally. The final dataset is broadly representative of English and Welsh populations in terms of age and sex, although those of White ethnicity and rural areas are overrepresented. From a total of more than 400,000 patients with kidney disease, there was a total of more than 250,000 years of follow-up.

The first part of the National Report, published in January 2017, focussed on the identification and management of CKD in primary care<sup>4</sup>. Recommendations included:

- Ensure that both blood tests AND urine protein tests are used in people at risk of CKD. On average GPs test 86% of people with diabetes for CKD (using annual eGFR), but only 54% have the relevant annual urinary albumin to creatinine ratio (uACR). For other groups

(such as those with hypertension), uACR rates are below 30%

- Improve coding of people with CKD. There is considerable variation in coding for CKD between GP practices. The proportion of people with CKD stage 3-5 that were uncoded ranged from 0% to 80%
- For those people with identified (coded) CKD, effort should be focussed on regular review, blood pressure management and prevention of CVD. There was considerable variation in achievement of blood pressure control, with 70% of those at highest risk of poor outcomes not meeting recommended targets
- Patients with CKD are at increased risk of the consequences of infection. It was found that many patients with advanced CKD did not receive the recommended pneumococcal vaccination

This second part of the National Report has a focus on the outcomes for people with CKD with stages 3-5 for whom GPs are asked to keep a register according to the Quality Outcomes Framework as recommended by NICE<sup>2</sup>. Outcomes investigated included emergency hospital admissions, rates of death, and referrals from GPs to specialist kidney services. To do this, we linked data from the GP record with routine NHS datasets including the Hospital Episode Statistics database for England, hospitalisation data held at the NHS Wales Informatics Statistics and information on deaths from the Office for National Statistics.

We asked:

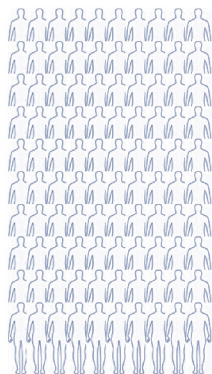
1. What are the rates of unplanned hospital admission for people with CKD?
2. For people with CKD who were admitted to hospital:
  - What are the rates of admission for acute kidney injury (AKI), for acute cardiovascular (CV) disease and to intensive care units (ICU)?
  - Do these rates vary by CKD severity and coding status?
3. What are the rates of death for people with CKD?
4. Are GP referrals for people with CKD being seen by a specialist within 18 weeks?

\* HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the NCA Programme, comprising more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands. The NCKDA is funded by NHS England and the Welsh Government.

# // Findings, Recommendations and Next Steps

## Findings

### Finding 1: Unplanned (Emergency) Hospital Admissions are common in people with CKD, and more likely as CKD worsens



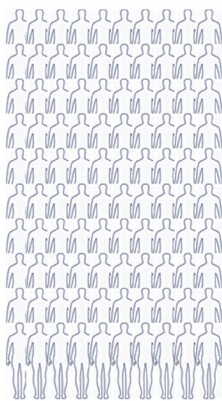
For every 100 patients with CKD Stage 3:  
36 unplanned admissions every year



For every 100 patients with CKD Stage 4:  
75 unplanned admissions every year



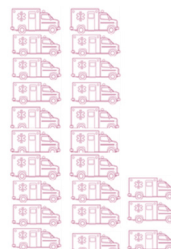
### Finding 2: Hospital admissions for specific events (Acute Kidney Injury (AKI), Cardiovascular Disease, Intensive care)



For every 100 patients with CKD Stage 3:  
7 AKI events at admission every year



For every 100 patients with CKD Stage 4:  
23 AKI events at admission every year



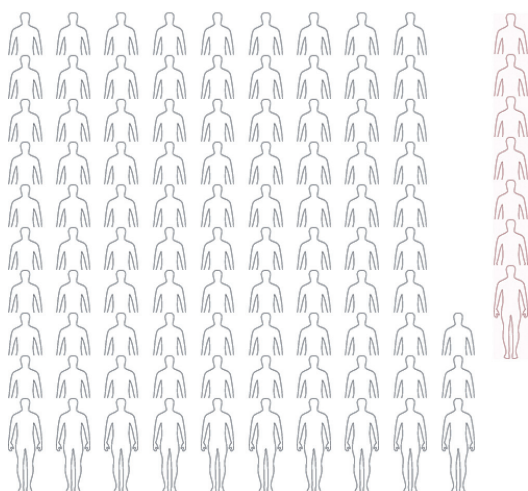
For every 100 patients with CKD Stages 3-5, there are

- 7 AKI events at time of admission per year
- 6 CV disease events per year
- 2 admissions to the ICU per year

As CKD worsens, these events are more common.

### Finding 3: Rates of Death for People with CKD

For every 100 patients with CKD Stage 3:  
7 patients die each year



For every 100 patients with CKD Stage 4:  
19 patients die each year



Death is more common in people with more severe CKD.

### Finding 4: Coding of CKD and patient outcomes

- Unplanned admissions are more likely among people with CKD that has not been coded in primary care compared to those who are coded. The magnitude of the difference between the rate of unplanned admissions for patients who are coded, compared with those who are not, increases as kidney function declines.
- AKI at hospital admission is more likely among people with CKD who have not been coded in primary care compared to those who are coded. The magnitude of this difference increases as kidney function declines.
- The figure on the next page demonstrates that death rates are approximately twice as high among people with CKD who have not been coded for CKD in primary care compared to those who have been coded. The magnitude of the difference in mortality rates for patients who are coded compared with those who are not also increases as kidney function declines.
- The differences in unplanned admissions, AKI and death rates for coded and uncoded patients are not explained by differences in age. Nor are they explained by whether the patients also had one or more of a defined group of medical conditions that are also known to affect the likelihood of these events happening.

## How to read the graph below

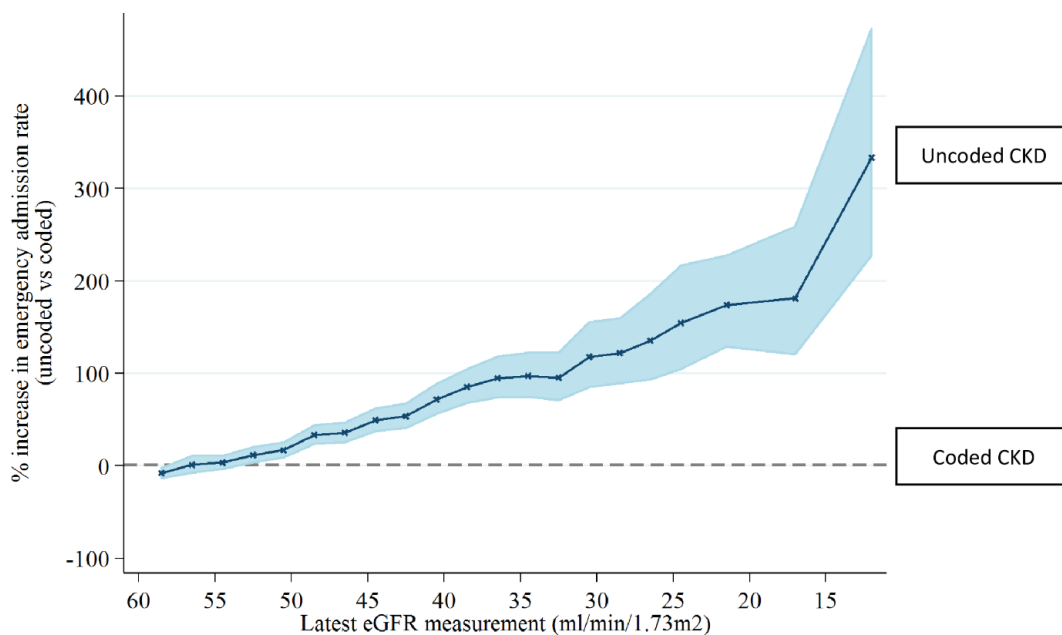
This type of graph shows the difference in outcomes for patients with reduced eGFR recorded with a code for CKD in their primary care record and those without. The vertical axis gives a measure such as the percentage increase in rate of hospital admissions or acute kidney injuries, and the horizontal axis shows the degree of loss of kidney function (estimated glomerular filtration rate, also known as eGFR).

The coded patients are represented by the dotted line. The other line on the graph shows the percentage difference for outcomes in patients who are not coded compared to those who are coded.

The blue background on the uncoded patients line represents statistical uncertainty for the estimated increase in rate, meaning the figure could range anywhere within the blue area.

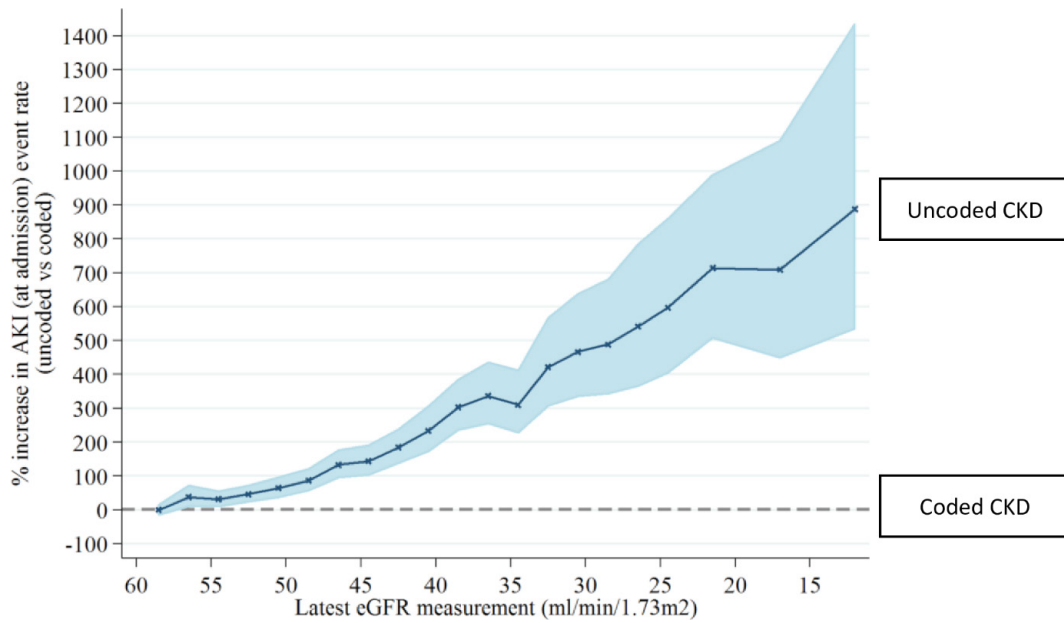
The data in the graph takes in to account differences in age and sex between the coded and uncoded groups, as well as the presence of coded diabetes, hypertension, and CV diseases. However, there may be additional factors contributing to the percentage differences which we do not have data for, such as time since a patient's last eGFR measurement.

## Comparison of unplanned admissions between uncoded and coded patients with biochemical CKD stages 3-5

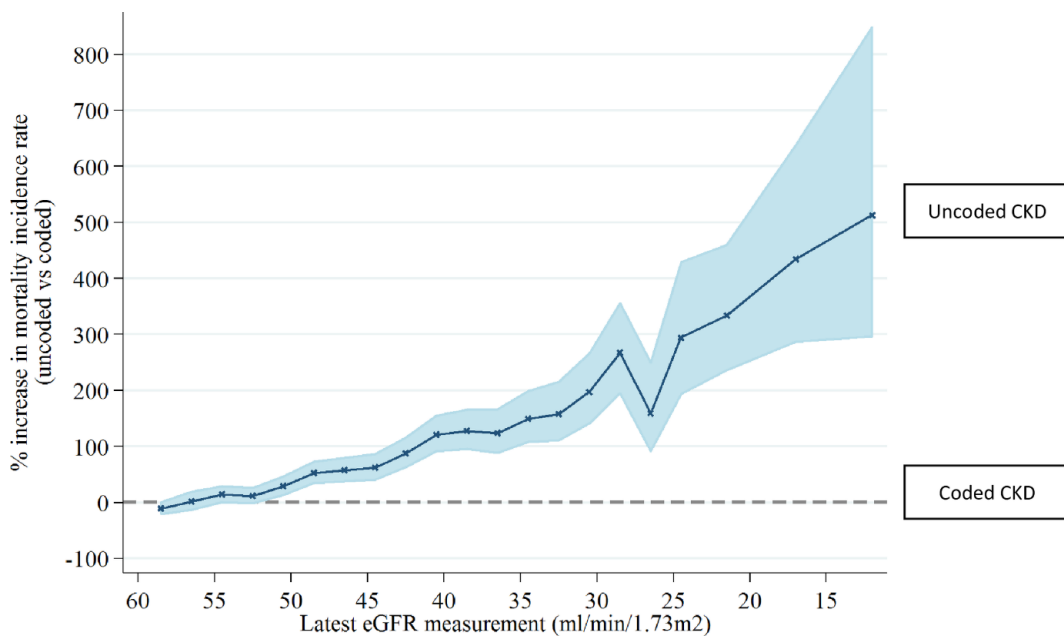




### Comparison of all first AKI events during hospitalisation between uncoded and coded patients with biochemical CKD stages 3-5



### Comparison of deaths between uncoded and coded patients with biochemical CKD stages 3-5



The findings on coding need to be treated with caution as the NCKD audit data set can only take account of and adjust for a limited number of medical conditions and physical features that patients may have alongside their CKD. There are potentially a wide range of medical conditions and social circumstances that we are unable to capture reliably using the NCKD audit data, which in some cases might account for both the reason why a patient is not coded and why they have an emergency admission or an additional risk of death. Poor coding of other medical conditions in the GP record could also be a factor as it would result in missing data in the audit's adjustment calculations.

Further work is needed to establish a causal relationship between coding CKD in primary care (and the related actions when identifying and managing those patients) and outcomes in hospital settings.

## **Finding 5: Referrals from GPs to specialist renal services**

- Following a GP referral to renal services we find that 95% of cases have a record of a nephrology outpatient appointment within the NHS delivery target of 18 weeks<sup>5</sup>.