

Audit of patients with moderate to severe chronic kidney disease (eGFR <45) to improve cardiovascular risk factors

Introduction

For every 100 patients with chronic kidney disease (CKD) and moderate to severe kidney function impairment there are each year, 7 deaths, 38 unplanned admissions, 6 cardiovascular events and 7 events of acute kidney injury¹

Individuals with CKD are much more likely to die of cardiovascular disease than to develop kidney failure, cardiovascular disease in CKD is treatable and potentially preventable, and CKD is a significant risk factor for cardiovascular disease²

Despite this CKD remains outside the group of well-recognised cardiovascular risk factors in many healthcare settings. Most primary and secondary prevention of cardiovascular disease happens in the community and therefore it is important that primary care physicians become proactive in diagnosing and managing CKD in its most relevant setting³

Our audit looked at this vulnerable group of patients with a view to improving their care by focusing on their cardiovascular risks.

Background

Chronic kidney disease (CKD) is common, frequently unrecognized and often exists together with other conditions (for example, cardiovascular disease and diabetes). CKD is usually asymptomatic, however, because of a lack of specific symptoms people with CKD are often not diagnosed, or diagnosed late when CKD is at an advanced stage.

There is building high-level evidence that the presence of CKD is a greater risk factor for cardiovascular disease than is diabetes. Kidney disease is not just another risk – it is a strong and independent risk factor that when identified and managed properly will contribute significantly to the striking and continuing fall in cardiovascular mortality⁴

Patients with CKD in primary care experience very high rates of unplanned admissions to hospital. Thirty eight unplanned admissions each year for every 100 patients with CKD stages 3 -5. This compares with an overall rate in England of 10 per 100 people. CKD can progress to established renal failure in a significant percentage of people. There is evidence that treatment can prevent or delay the progression of CKD, reduce or prevent the development of complications, and reduce the risk of cardiovascular disease. It is estimated that approximately 7000 excess strokes and 12,000 excess myocardial infarctions occurred in people with CKD in 2009–10 (relative to an age- and gender-matched population without CKD).

The National Audit of Chronic Kidney Disease, which is the largest study of current practice in the world published two reports in January 2017 and December 2017 and focused on kidney disease management in primary care. It made a number of recommendations which puts the most recent CKD quality standards issued by NICE

(<https://www.nice.org.uk/guidance/qs5>) into context.

This audit re-in forced our interest in CKD management in primary care.

The classification of CKD has been updated to include urinary ACR categories in addition to GFR

categories. The reasons behind this are that large population studies clearly demonstrate increased risk of adverse outcome (all cause mortality, cardiovascular mortality, ESRD, AKI) with decreasing eGFR and increasing ACR. (ref new NICE CKD guidelines 2014)

NICE recommends different blood pressure targets according to whether a patient has substantial proteinuria and/or diabetes. Among people coded with CKD stage 3b-5 and without diabetes or an ACR<70 mg/mmol the blood pressure target is less than 140/90 mmHg. People are deemed to meet this target if both the systolic and the diastolic measures are below these values ⁵.

The SHARP trial has shown that primary prevention with statins reduces adverse cardiovascular outcomes in people with CKD (Baigent et al., 2011) and this was followed by guidance from NICE recommending all people with CKD be offered a statin (National Institute for Health and Care Excellence, 2014). Therefore, any patient with coded CKD stage 3-5 should be offered a lipid-lowering drug, a statin, unless there are known contraindications.

NICE recommend offering a low cost renin–angiotensin system antagonist to people with CKD and diabetes and an ACR of 3 mg/mmol or more (ACR category A2 or A3); hypertension and an ACR of 30 mg/mmol or more (ACR category A3); and an ACR of 70 mg/mmol or more (irrespective of hypertension or cardiovascular disease). However, combinations of renin–angiotensin system antagonists are actively discouraged.

NICE also recommends offering antiplatelet drugs to people with CKD for the secondary prevention of cardiovascular disease, but counsels awareness of the increased risk of bleeding.

Aims and Objectives

The aim of this audit is to identify all practice patients who have a diagnosis of a CKD stage 3b-5 with the ultimate aim of improving cardiovascular risk factor screening within this population.

Guidelines used

The National Institute for Clinical Excellence (NICE) Quality and Outcomes Framework (QOF) Indicators:

NICE id code: NM109

NICE id code: NM83

NICE id code: NM117

NICE id code: NM84

<https://www.nice.org.uk/guidance/qs5/chapter/Quality-statement-3-Statins-for-people-with-CKD>

<https://www.nice.org.uk/guidance/cg182/chapter/1-Recommendations#pharmacotherapy>

Criteria

Criterion 1:

Identify all patients aged 18 and over with CKD stage 3b-5. Create a practice register, flag the patients and ensure that **eGFR and albumin /creatinine ratio** is recorded

Criterion 2:

80% patients with CKD eGFR stage 3b-5 have **blood pressure** reading within recommended target.

Criterion 3:

All patients with CKD stage 3b-5 were offered a **statin** unless a contraindication

Criterion 4:

All patients have **BMI** checked and offered advice on weight loss if obese⁶

Criterion 5:

All patients have **smoking status recorded** and if a smoker offered advice on discontinuing⁷

Criterion 6:

All patients to be prescribed an **ACEi/ARB** as per NICE guidelines 2014

Criterion 6:

All patients be **offered antiplatelet drugs** for secondary prevention.

Cycle 1

A Health One search was configured to extract all patients with an eGFR < 45. The search was run on 16/10/2018. There were 43 patients identified 18 years and over with an eGFR < 45. These patients' charts were flagged and ICD 10 coded with their diagnoses to create a disease register

On review of the electronic health records it was determined that 9 patients or 21% of these patients had an eGFR and albumin /creatinine ratio recorded.

On review of the electronic health records it was determined that 28 patients or 65% of these patients had a blood pressure reading within recommended target within the last year.

On review of the electronic health records it was determined that 31 patients or 72% of these patients had been offered a statin within the last year unless a contraindication.

On review of the electronic health records it was determined that 22 patients or 51% of these patients had their BMI checked within the last year and offered advice on weight loss if obese.

On review of the electronic health records it was determined that 34 patients or 79% of these patients had their smoking status recorded and if a smoker offered advice on discontinuing.

On review of the electronic health records it was determined that 20 patients or 47% of these patients were prescribed an ACEi/ARB as per NICE guidelines.

On review of the electronic health records it was determined that 15 patients or 39% of these patients had been offered antiplatelet drugs for secondary prevention within the last year.

Changes implemented

1. All 43 patients were contacted and an appointment arranged with a doctor or nurse. Information was gathered on smoking status. BMI was calculated and charted. A urine was checked for protein and blood and sent to biochemistry for an albumin creatinine ratio. The patient was given information on kidney failure, on stopping smoking if appropriate, on taking regular exercise. Medication was reviewed to ensure that each patient was on a statin or offered one unless a contraindication. An ACEi/ARB was prescribed as per NICE guidelines and an antiplatelet drug for secondary prevention. Anti-hypertensive medication was adjusted if readings were outside of recommended targets.
2. We added an additional window to the opening screen of each patient file which identified the patient as having chronic kidney disease, which now identifies their Read code, gives their most recent blood pressure recording, lipid profile, BMI, smoking status and chronic medication prescribed.

Cycle 2 Results and Analysis

A Health One search was run on 27/03/2019. There were 49 patients aged 18 years and over with CKD eGFR <45 identified. The practice database was updated to reflect the changes.

On review of the electronic health records it was determined that 46 patients or 94% of these patients had an eGFR and albumin /creatinine ratio is recorded.

On review of the electronic health records it was determined that 42 patients or 85% of these patients had a blood pressure reading within recommended target within the last year.

On review of the electronic health records it was determined that 46 of patients or 94% of these patients had been offered a statin within the last year unless a contraindication.

On review of the electronic health records it was determined that 46 of patients or 94% of these patients had their BMI checked within the last year and offered advice on weight loss if obese.

On review of the electronic health records it was determined that 49 of patients or 100% of these patients had their smoking status recorded and if a smoker offered advice on discontinuing.

On review of the electronic health records it was determined that 31 patients or 63% of these patients were prescribed an ACEi/ARB as per NICE guidelines.

On review of the electronic health records it was determined that 47 patients or 96% of these patients had been offered antiplatelet drugs for secondary prevention within the last year.

There was **73% increase** in the number of patients who had an eGFR and albumin /creatinine ratio is recorded.

There was **20% increase** in the number of patients who had a blood pressure reading within recommended target within the last year.

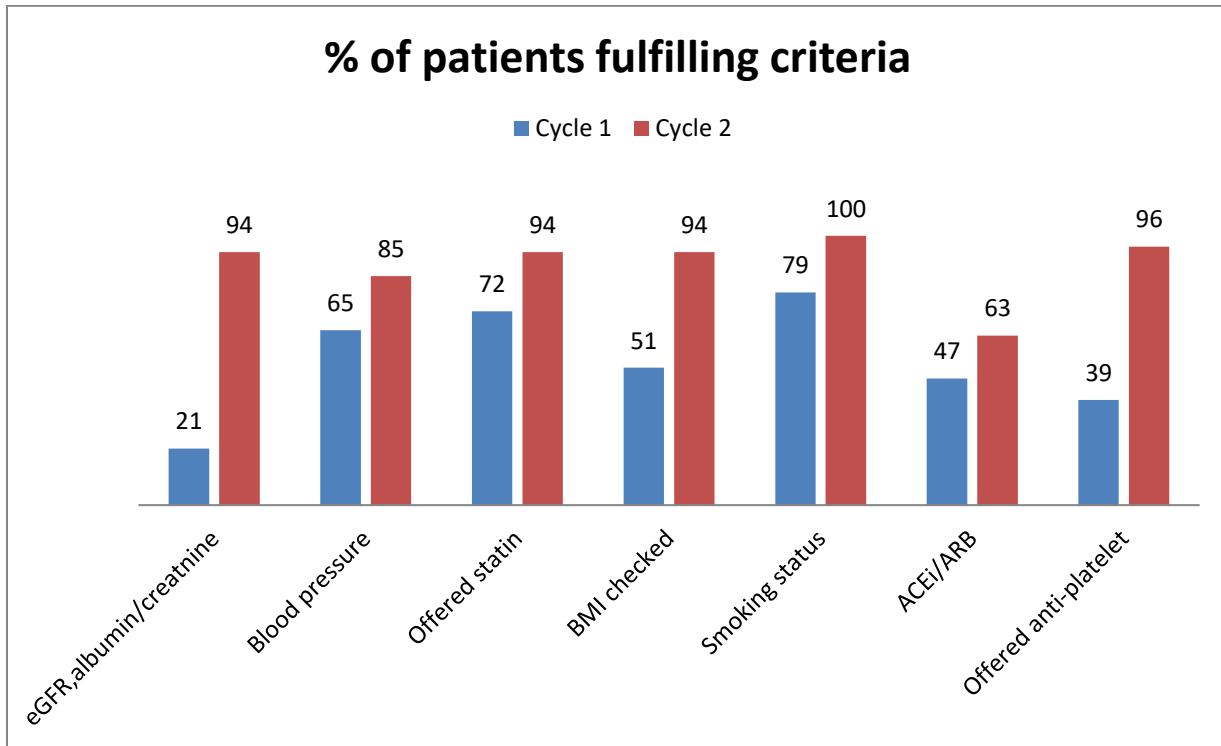
There was **22% increase** in the number of patients who had been offered a statin within the last year unless a contraindication.

There was **43% increase** in the number of patients who had had their BMI checked within the last year and offered advice on weight loss if obese.

There was **21% increase** in the number of patients who had their smoking status recorded and if a smoker offered advice on discontinuing.

There was **16% increase** in the number of patients who were prescribed an ACEi/ARB as per NICE guidelines.

There was **57% increase** in the number of patients who had been offered antiplatelet drugs for secondary prevention within the last year.



Discussion

We developed an interest in CKD when prescribing repeat medications. We noticed that although it was usually clear from the file that the patient had conditions such as diabetes and hypertension it was quite often unclear that they had CKD. This was in part due to the medications prescribed for diabetes and hypertension "alerting" the prescriber to the diagnosis but also due to a lack of coding for CKD patients. The majority of patients with CKD will be managed solely in the community. Our perception prior to researching this topic was that it is a condition often "hidden and forgotten". We decided to choose CKD as an audit topic having read the National Audit of Chronic Kidney Disease 2017 which looked at the management of CKD in primary care, in England and Wales and is the largest source of information on this topic worldwide. 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.

Over the last four months we have made significant practice improvement changes to our IT system to alert the prescribing physician to the fact that the patient has CKD and by providing him/her with the relevant cardiovascular risk factors in one screen on opening the patients' file. Prior to this, 70% of CKD patients with an eGFR < 45 had no ICD 10 or Read code recorded and in 100% of cases the doctor had to search within the file for data relevant to their cardiovascular risks. The practice improvement project facilitated our audit on cardiovascular risk factors in CKD.

We plan to broaden our focus to patients with CKD 3a-5 and to look at how the changes impact on secondary care.

Conclusion

Chronic kidney disease is an important cardiovascular risk factor and yet one often forgotten. We have made important changes within our practice to improve the care of this group of patients. We encourage other practices to look at this group of patients.

References

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