

Chronic Kidney Disease/Hypertension project

***NHS Central Manchester CCG
Chorlton & Whalley Range Locality
and Ardwick & Longsight Locality***

May 2014 to April 2015

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Executive Summary

- A chronic kidney disease (CKD)/hypertension project was established in May 2014 involving nine practices in the Chorlton & Whalley Range Locality and three practices in the Ardwick and Longsight Locality of NHS Central Manchester CCG. The project was conducted over a 12 month period and aimed to increase the accuracy of CKD coding and also to improve the management of CKD.
- The IMPAKT™ CKD tool, consisting of a series of MiQuest queries, was installed at each practice providing two lists of patients; list 1 to verify the existing register and list 2 to identify patients who may have CKD but were not coded as such.
- CLAHRC facilitators visited practices and supported them throughout the project; offering advice on register work and also on implementing systems and protocols within the practice to assist with recalling patients for ACR testing.
- A CKD workshop was provided in September 2014. In addition, on-going education was provided on a one to one basis by a nurse facilitator if required.
- The QICKD modelling tool was used to estimate the target prevalence for each practice.
- Objective 1 was to halve the gap between recorded and estimated prevalence, with practices needing to find a total of **399** new patients to reach this target. At the end of the project, **368** additional patients were identified, achieving **92%** of the target.
- Baseline prevalence was **2.32%** (**1,221** CKD patients) at the end of the project this increased to **3.03%** (**1,590** patients).
- Objective 2 was for 75% of CKD patients to be tested for proteinuria and managed to NICE recommended blood pressure targets. Collectively, the 12 practices achieved a combined percentage of **72%**. Individually, **6** of the **12** practices achieved this objective.
- Overall practices were successful in testing CKD patients for proteinuria with a combined percentage of **82%** of patients tested.
- For all 12 practices, **93%** of CKD patients without proteinuria had blood pressures to NICE target, compared to **47%** for CKD patients with proteinuria. The number of patients with proteinuria in each practice was low, but the suboptimal management of blood pressure in this cohort of patients has been highlighted in all phases of the CLARHC CKD projects and is the focus of the accompanying evaluation (see below).
- Recommendations are: for practices to re-run IMPAKT™ on an annual basis, to extend the invitation to the CKD workshop in the next phase of the project to all practices in NHS Central Manchester CCG to extend the invitation to new staff and staff who could not attend previous workshops and in an attempt to understand the barriers and enablers of managing blood pressure for CKD patients with proteinuria CLAHRC proposes to evaluate this using quantitative and qualitative methodologies.

1 Introduction

CKD is common, harmful and treatable. It affects about 6% of adults (stages 3-5) in the UK and greatly increases a person's risk of suffering a stroke, heart attack, renal failure or death¹. A 2003 retrospective analysis of all patients newly diagnosed with CKD in Southampton found that 35% died after five years, 46% of which were cardiovascular related². However, diagnosing the condition early and managing patients' wellbeing is important for their health; a study in Lincolnshire that identified and subsequently treated 483 CKD stage 4 and 5 patients estimated that in doing so they had prevented a total of 28 deaths³. Earlier identification and treatment to slow disease progression resulted in an estimated saving of 97 dialysis years over five years; a projected cost of £2.7m.

Although the figures above suggest CKD is a strong indicator of vascular events, research has shown that there is a sizeable confidence gap in not only the diagnosis, but the general management of CKD patients in comparison with other, more established chronic disease pathways, for example, diabetes⁴. This results in a lack of clarity on how to provide best care for CKD, variation in practice and patients not being informed about their diagnosis or called in for regular review.

The current spend on CKD and related problems represent a large financial burden for the NHS. Programme budgeting data from the Department of Health showed that NHS expenditure on renal problems was £1.34billion in 2008/09⁵. In a report published by NHS Kidney Care in 2012, it was estimated that in 2009/10 approximately 95% of spend on renal problems is within secondary care, and 5% in primary care. This proportional split is representative across England⁶.

The NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Greater Manchester have collaborated with groups of GP practices across Greater Manchester over the past three years to deliver 12 month improvement projects, to enable practices to increase prevalence of early CKD and support them to improve the management of hypertension in these patients.

These projects aimed to improve the identification and management of early stage kidney disease in primary care to tackle the recognised translation gap between evidence and best practice. This is evident in the number of undetected cases of CKD in practice registers (comparing the Quality and Outcomes Framework (QOF) data with research data on expected prevalence) and a confidence gap amongst primary care clinicians in the diagnosis and management of CKD, especially in comparison to other vascular conditions with more established management pathways.

This report presents the results of the CKD/Hypertension project conducted in the Chorlton and Whalley Range Locality and the Ardwick and Longsight Locality of NHS Central Manchester CCG between May 2014 and April 2015.

2 CKD/Hypertension Improvement Project

2.1 Background

In the majority of cases, CKD can be managed routinely in primary care. CKD became part of the QOF in 2006, with NICE CKD guidelines released in 2008 and 2014⁷. These two factors supported an increase in the understanding and diagnosis of CKD in primary care, but research suggests that a significant number of CKD patients remain undiagnosed.

Central Manchester CCG QOF data for 2012/13 reports 3,539 recorded cases of CKD in Greater Manchester with a prevalence of 2.1%⁸. A study from 2011⁹ estimated national prevalence for CKD to be 5.4%. However, as 5.4% is considered to be an overestimation for Manchester due to its younger population. To determine a more accurate figure the QICKD modelling tool was used which is based on the age/sex profiles of each practice.

In terms of NHS expenditure, the total spent on renal problems for Manchester PCT in 2012/2013 was £17,916,000. Of this, £431,000 (2.4%) was in primary care, £16,072,000 (89.7%) was in secondary care, £1,177,000 (6.5%) being spent in the social care sector and the remaining £236,000 (1.3%) in community care (*Figure 1*). Although these figures represent Manchester PCT as a whole, they support the fact that renal problems pose a significant financial challenge to the NHS¹⁰.

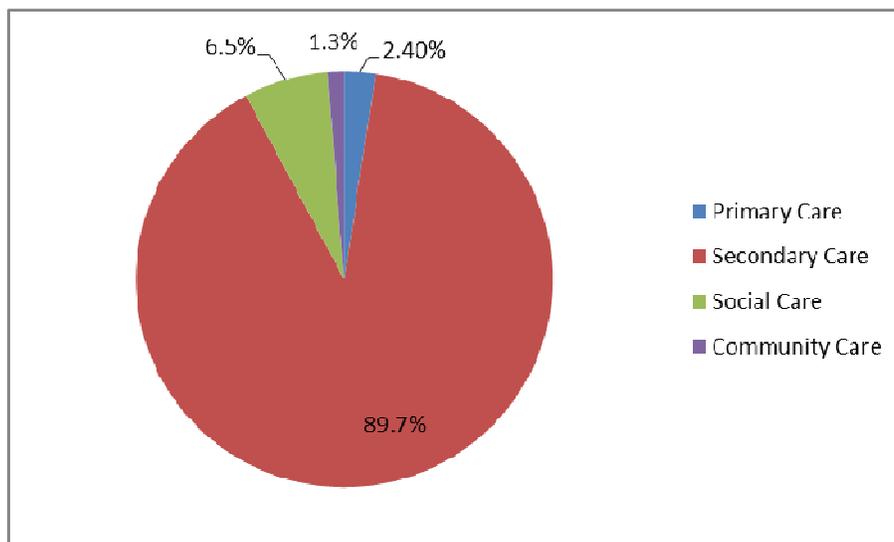


Figure 1 Illustrates the percentage of the total expenditure for Manchester PCT on renal problems for 2012/2013

The CKD/Hypertension Project was initiated to help address some of the problems outlined above. The introduction of CKD registers in primary care became mandatory with QOF helping to address some of the problems of late presenters in secondary care with end-stage kidney disease. However, the figures above highlight the importance of improving the early identification of CKD and reinforcing better management of the disease.

With confidence being recognised as a problem area in the management of CKD, this project aimed to raise the profile of CKD and to provide primary care teams with the knowledge and skills to diagnose patients more accurately.

2.2 Project Aims and Objectives

The CKD/Hypertension project was commenced in NHS Central Manchester CCG in 2013 in the Hulme, Mosside and Rusholme Locality with the overarching aim of improving the quality of management and care for people with CKD. The associated objectives were:

- To halve the gap between recorded and estimated prevalence on practice registers.
- For 75% of CKD patients (no exception) to be tested for proteinuria and managed to NICE blood pressure targets at project close.

2.3 Project Design

The CKD/Hypertension project consists of a series of interlinked activities: installation of the IMPAKT™ CKD audit tool, register verification and case finding, clinical education sessions, on-going facilitation support and a final project data count. *Figure 2* below provides an overview of the process. A more detailed discussion of each component is then provided.

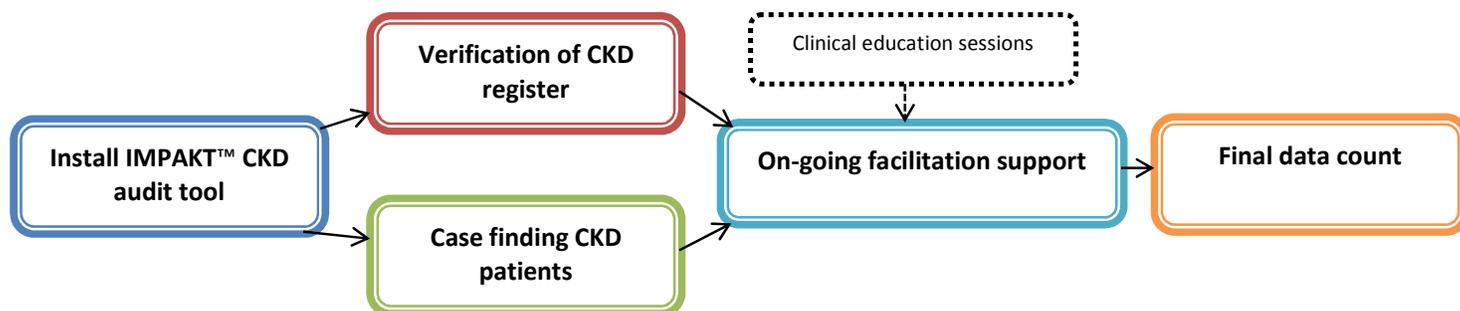


Figure 2 Design of CKD/Hypertension project

2.3.1 IMPAKT™ CKD Audit Tool

IMPAKT™ CKD is a MiQuest based audit tool that extracts data from primary care clinical systems. The tool was installed at each practice by the clinical services unit (CSU) data quality managers. Two lists of patients were produced; the first list identified all patients coded with CKD, including recommendations for patients who may have been coded in error and also those with inaccurate coding in relation to stage of CKD. The second list identified those patients not on the CKD register, but who had recorded eGFRs indicative of CKD requiring further investigation. Patients who have a confirmed diagnosis can be read-coded immediately however some require further investigations.

To support the installation of the IMPAKT™ tool, the IMPAKT™ CKD improvement guide was also provided. This document contained useful resources such as CKD Read codes, protocol examples and templates of invitation letters to use when recalling patients for diagnostic tests.

2.3.2 Register Verification and Case Finding

At the initial meeting each practice was asked to select an improvement team. This team included a mix of staff disciplines, usually involving a lead GP, practice nurse, assistant practitioner and admin team member. A CLAHRC facilitator met with each practice on a regular basis to facilitate the register validation and case finding process; in most cases this was with the practice nurse. The frequency of visits was between four and six weeks dependent upon the progress of each practice and staff availability. These visits were used to establish small tests of change using the Plan, Do, Study, Act (PDSA) improvement methodology.

Each practice worked through the lists of patients generated by the IMPAKT™ tool. To validate the existing CKD register, case find and improve blood pressure management the following actions were required:

- Requests were made for further diagnostic tests, if they were necessary.
- Patients coded as CKD in error were removed from the register or more appropriately coded.
- CKD stage coding was updated where necessary based on latest eGFR data for each recorded CKD patient.
- All CKD patient records were checked to ensure they had an ACR test within the previous 12 months.
- Patients with proteinuria were identified (based on ACR testing) and coded accordingly.
- CKD protocols were updated and developed.
- Patients were given their CKD diagnosis and their modifiable risk factors were reduced.

Similarly, those patients found to have eGFRs indicative of CKD, but were not coded on the register were investigated in order to diagnose or exclude CKD.

2.3.3 CKD/HTN Workshops

A CKD workshop was provided that was also utilized as a forum for teams to share any problems they were experiencing and to share any good practice. They also provided an opportunity for teams to direct specific questions to a renal specialist and feedback progress on their work.

2.3.4 Final Data Count

At the end of the project, a final data count was performed at each practice. This involved manually checking the clinical system for the number of patients on the CKD register with blood pressures to NICE targets and who were also tested for proteinuria in the previous 12 months.

2.3.5 Project Timeline

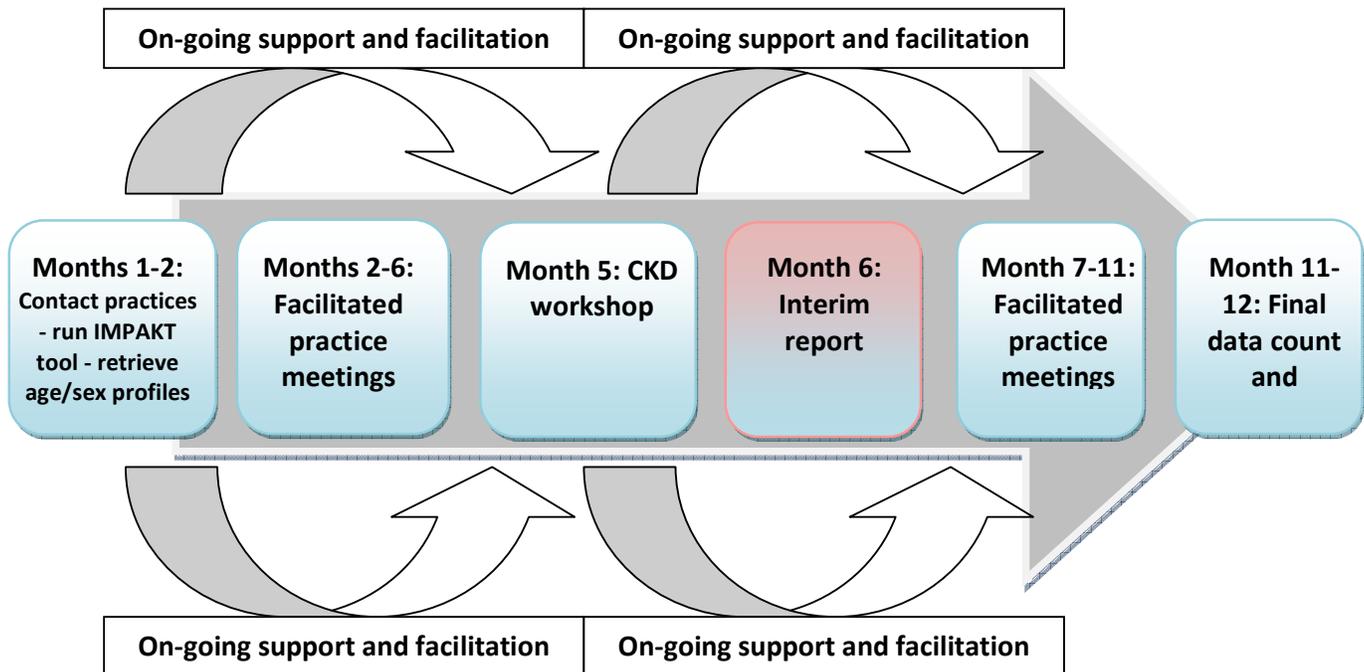


Figure 3 Shows an overview of the project timescales

2.3.6 Participating GP Practices

The project was offered to all 10 practices in the Chorlton and Whalley Range Locality and the 4 Ardwick practices within the Ardwick and Longsight Locality. Two practices declined to take part as they felt they already had a good understanding of CKD and the ongoing management of this condition, resulting in 12 (86%) of practices being recruited. Baseline data was collected in relation to register size and input into the QICKD CKD modelling tool to estimate the target prevalence for each practice. The overall baseline prevalence was **2.32%**, with a target prevalence of **3.08%**. Collectively, the 12 practices needed to identify a total of **399** patients to halve the gap between recorded and estimated prevalence. *Table 1* provides a breakdown of baseline and estimated prevalence per practice.

Practice	Baseline Population (18+ years)	Baseline CKD register	Baseline prevalence	Target CKD register	Target prevalence	Patients to find to halve prevalence gap
Dr Chiu, Koh & Gan	4724	114	2.41%	139	2.94%	+ 25
Dr Cunningham & Partners	3541	85	1.59%	128	2.40%	+43
Dr Ngan, Chan & Ho	6483	112	1.73%	127	1.96%	+ 15
Ashville Surgery	5957	172	2.89%	208	3.49%	+ 36
Corkland Road Medical Practice	6381	110	1.72%	157	2.46%	+ 47
Dr Chen, Davis & Chavdarov	2576	32	1.24%	75	2.91%	+ 43
Dr Ratcliffe & Chew-Graham	1619	69	4.26%	70	4.32%	+ 1
Oswald Medical Practice	3470	68	1.95%	96	2.77%	+ 28
Princess Road Surgery	3376	109	3.23%	130	3.85%	+ 21
The Alexandra Practice	4549	108	2.37%	158	3.47%	+ 50
The Range Medical Centre	6406	203	3.17%	223	3.48%	+ 20
The Wilbraham Surgery	3462	39	1.13%	109	3.15%	+70

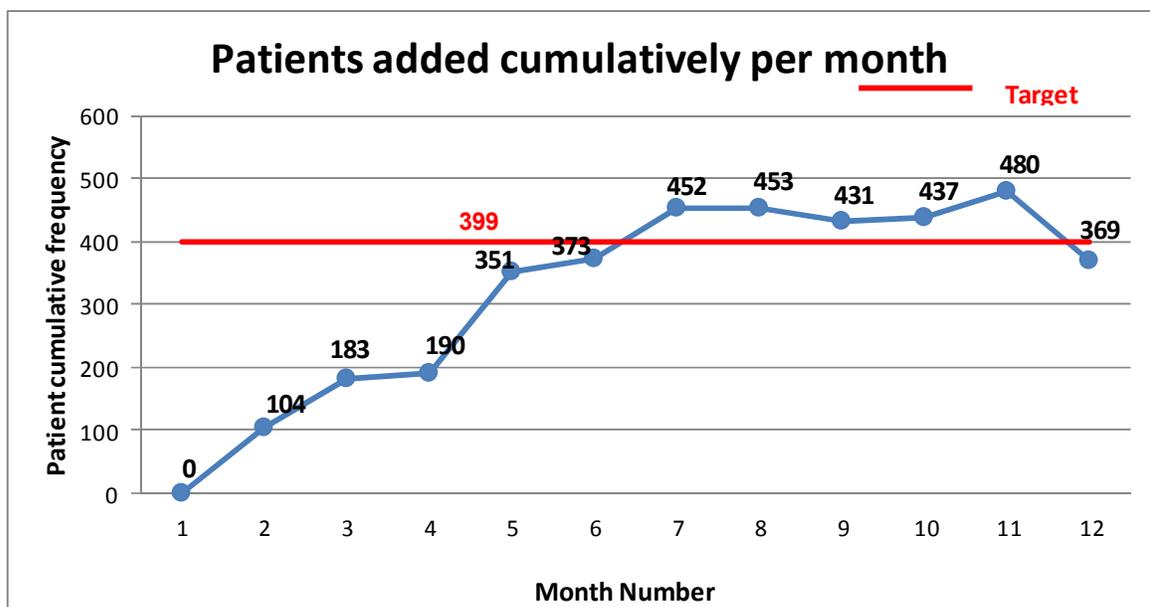
Table 1 Displays baseline data and prevalence target modelling using QICKD

Percentages for objective 1 have been rounded up or down to two decimal points

3. Results

3.1 Objective 1

Objective 1 was to halve the gap between the recorded and the estimated CKD prevalence. To meet objective 1, the seven practices were required to find a total of **399** patients. At the end of the project there were **369** patients added to the combined CKD registers, achieving **92%** of the target. Individually the Ardwick practices achieved **147%** of patients to find, and Chorlton and Whalley Range practices achieved **78%** of patients to find. The verification of the CKD registers was an on-going process with practices adding and removing patients as they were retested and diagnosis excluded throughout the project which is attributed to the reduction in the final number of patients. An increase was noted after the CKD workshop in month 4 had been held. (See Figures 5, 6 & 6)



Figures 4 Shows the cumulative frequency of patients added to the CKD register per month for all 12 participating practices. Highlighted in red is the target for all the practices combined in order to meet objective 1.

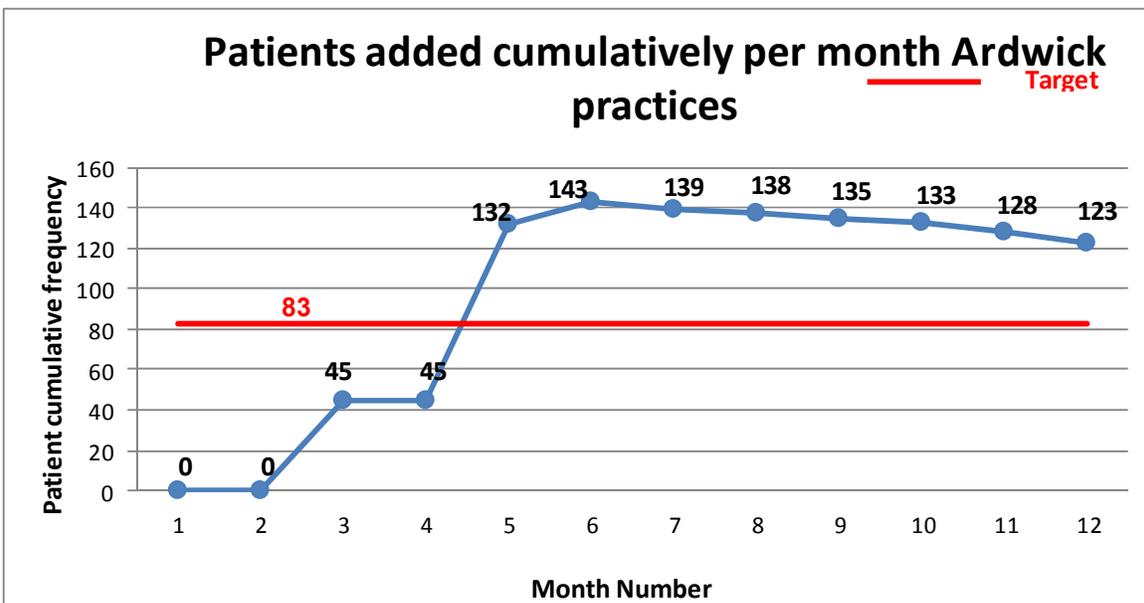


Figure 5 Shows the cumulative frequency of patients added to the CKD register per month for the Ardwick practices. Highlighted in red is the target for all the practices combined in order to meet objective 1.

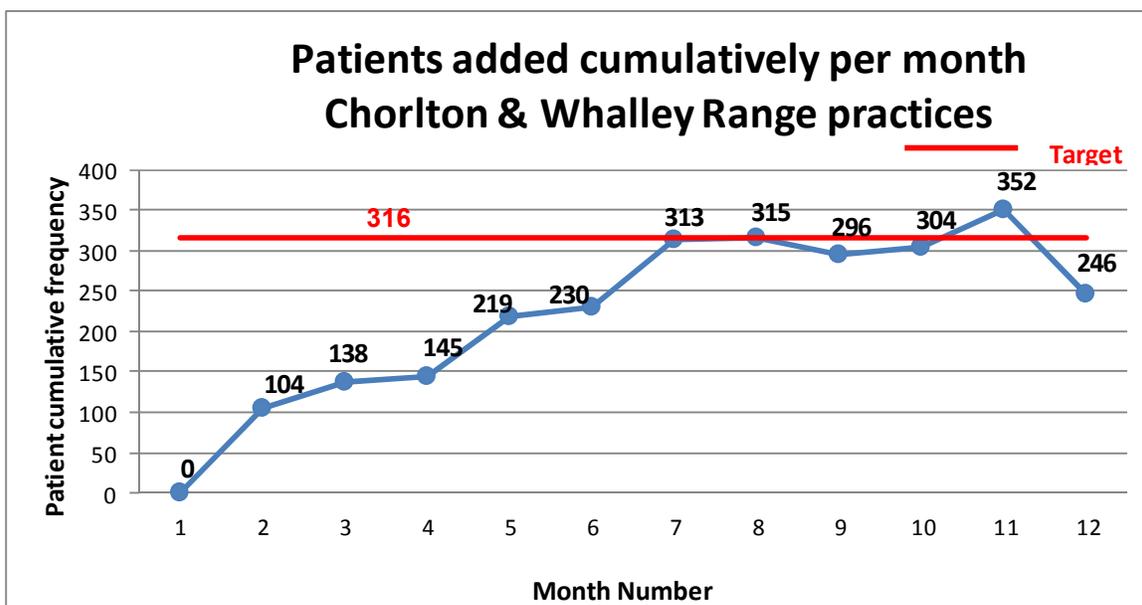


Figure 6 Shows the cumulative frequency of patients added to the CKD register per month for the Chorlton & Whalley Range practices. Highlighted in red is the target for all the practices combined in order to meet objective 1.

At the start of the project the CKD register total was **1,221** patients for the 12 practices with a prevalence of **2.32%**. At project end this figure had increased to a total of **1,590** patients with the total prevalence rising to **3.03%**. This represents an increase of **0.71%** with a percentage increase in terms of patient numbers of **30.22%** see *Figure 7*.

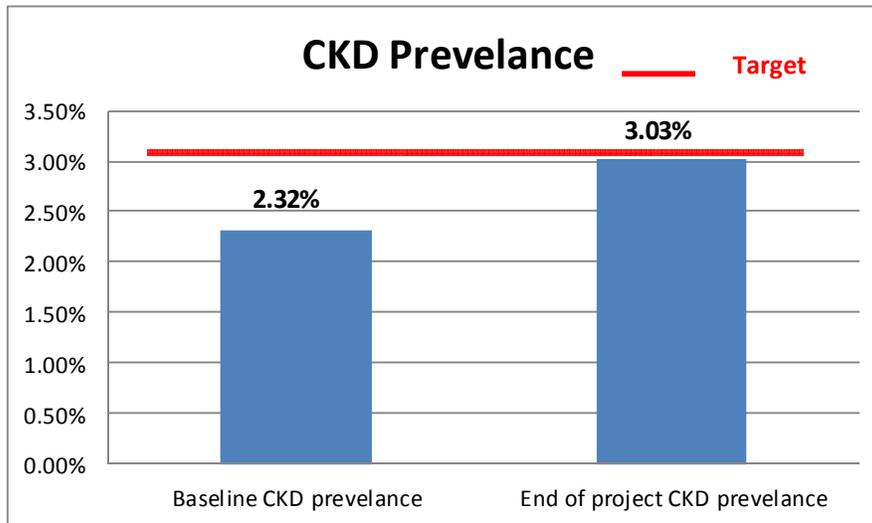


Figure 7 Represents the baseline and end of project CKD prevalence for the seven practices

Figures 8 and 9 below show the final results by individual practice with **5** out of the **12** practices achieving objective 1.

The number of patients to be added per practice ranged from **2** patients at Dr Ratcliffe and Chew-Graham (as they had a very accurate register at the start of the project) to **62** patients at The Range Medical Centre. **It is important to highlight that in order to verify their registers all practices had to also remove a number of patients who were incorrectly coded. Therefore the number of new patients identified and added is actually higher than reported, and this also explains why the number of patients on some CKD registers is lower at the end of project data count than the interim data count.**

Credit should be given to all practices for identifying additional patients and increasing the size of their registers. Although it is necessary to have a target for objective 1 so we can measure any improvement it should also be noted that some practices had much higher number of patients to find than others. It was much more difficult for these practices to achieve objective 1 but their hard work and commitment should be acknowledged as most only missed it by a few patients, for example, The Wilbraham Surgery and The Ashville Surgery.

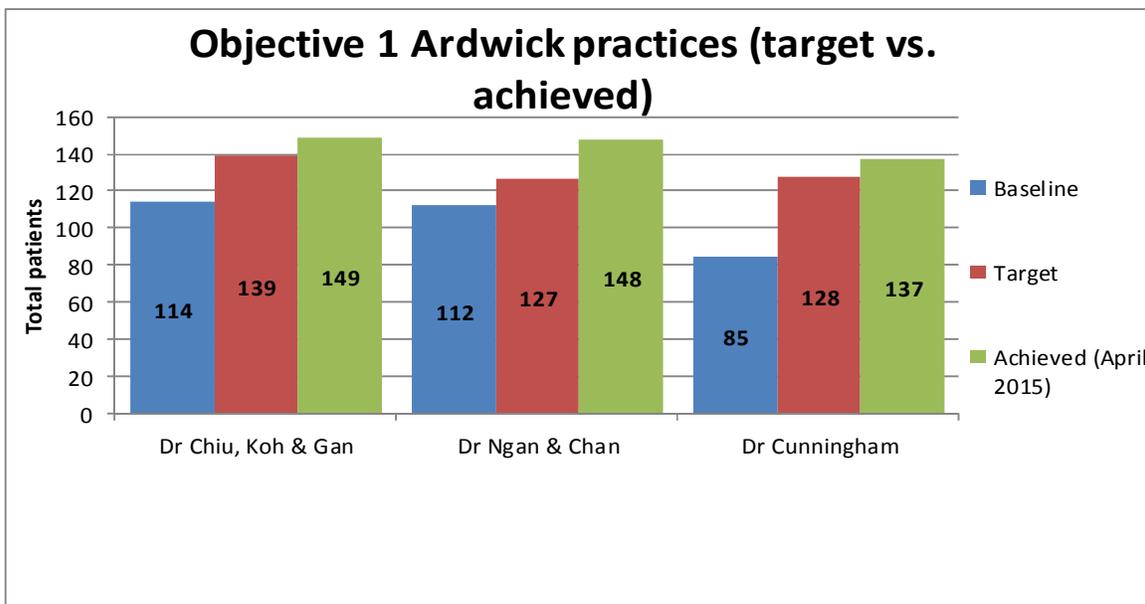


Figure 8 Breakdown per practice illustrating baseline CKD patient number, target number of patients in order to achieve objective 1 and the final number of patients on the CKD register at the end of the project for Ardwick practices

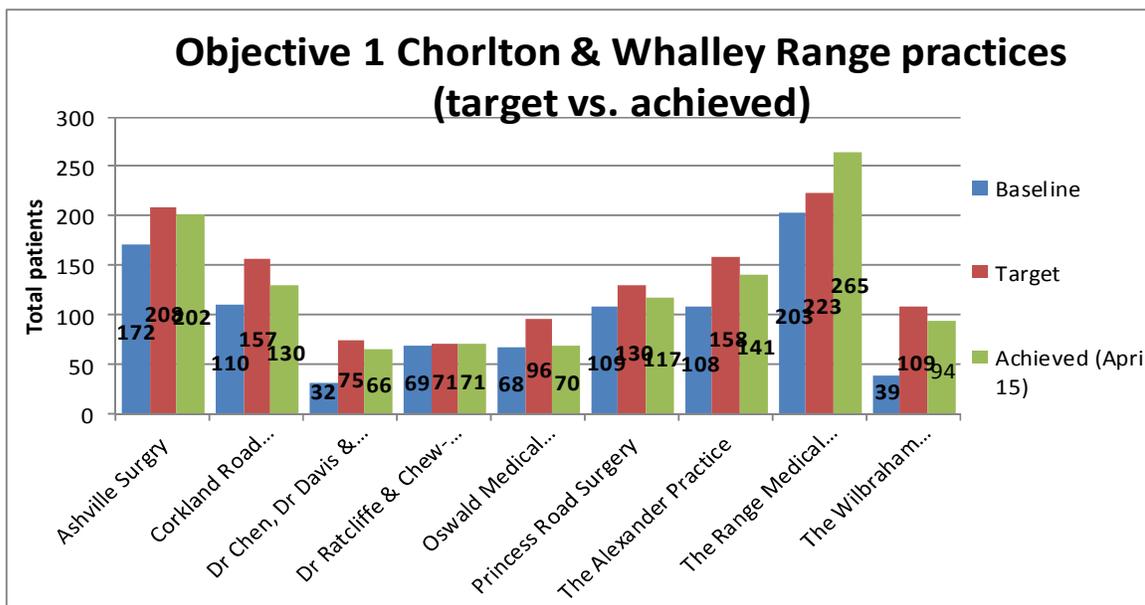


Figure 9 Breakdown per practice illustrating baseline CKD patient number, target number of patients in order to achieve objective 1 and the final number of patients on the CKD register at the end of the project for Chorlton & Whalley Range practices

3.2 Objective 2

Objective 2 was for 75% of CKD patients (no exception) to be tested for proteinuria and managed to NICE recommended blood pressure targets; $\leq 130/80$ mmHg for patients with proteinuria and $\leq 140/90$ mmHg for patients without proteinuria.

3.2.1 Proteinuria Testing

Since the interim data collection all practices have increased the percentage of patients ACR tested. The combined percentage of patients tested for proteinuria for all 12 practices is **82%**. (See Figures 10 and 12 for percentage tested and 11 and 13 for numbers of patients)

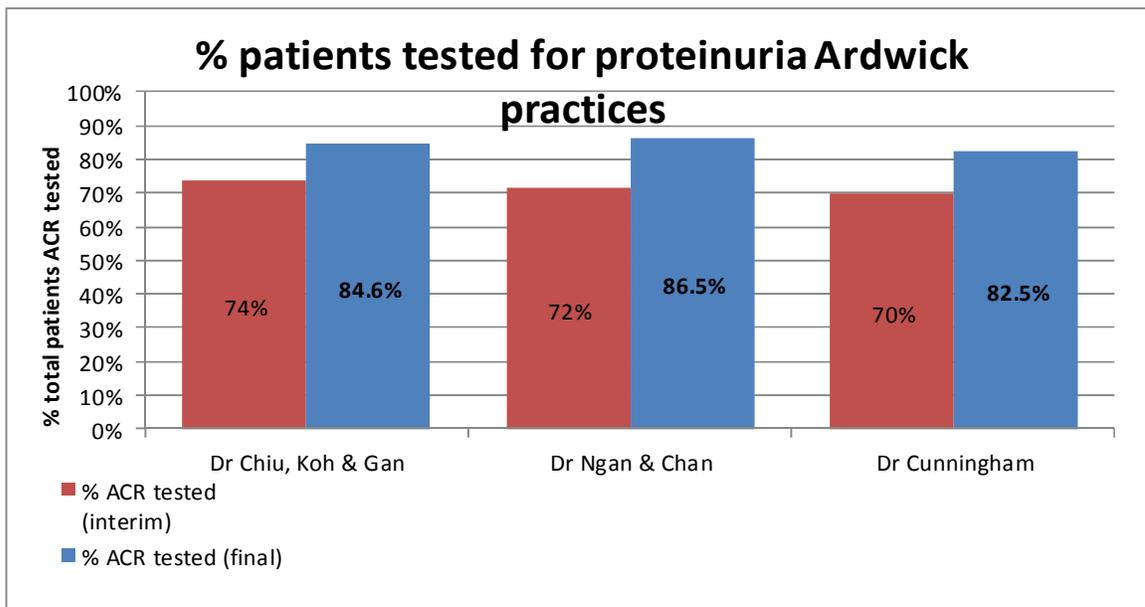


Figure 10 Shows the percentage of patients on the CKD register tested for proteinuria at interim and project end for the Ardwick practices

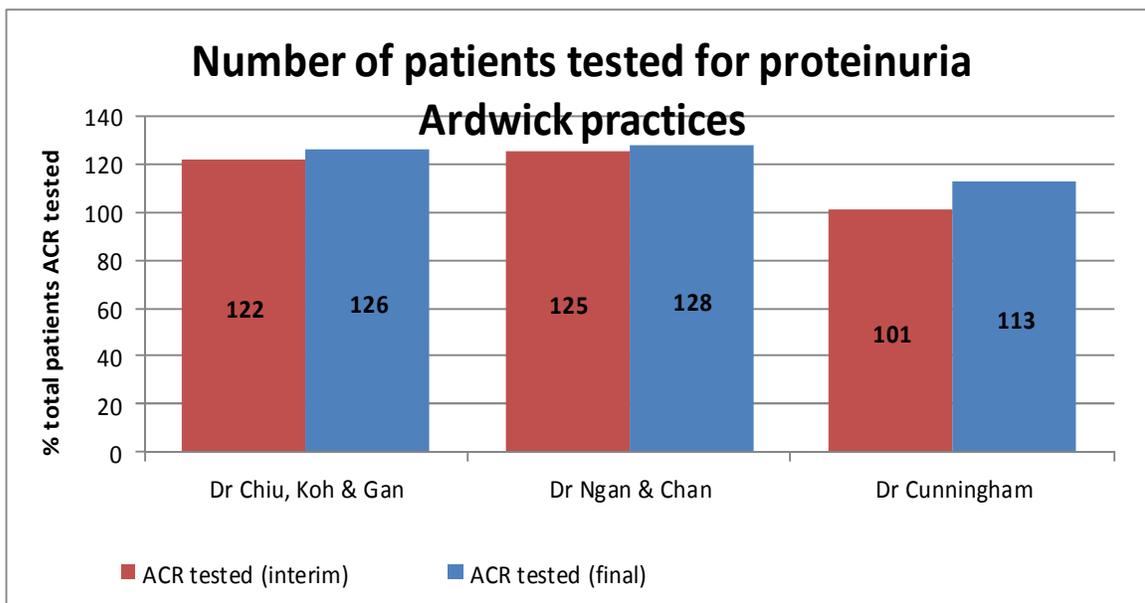


Figure 11 Shows the number of patients on the CKD register tested for proteinuria at interim and project end for the Ardwick practices

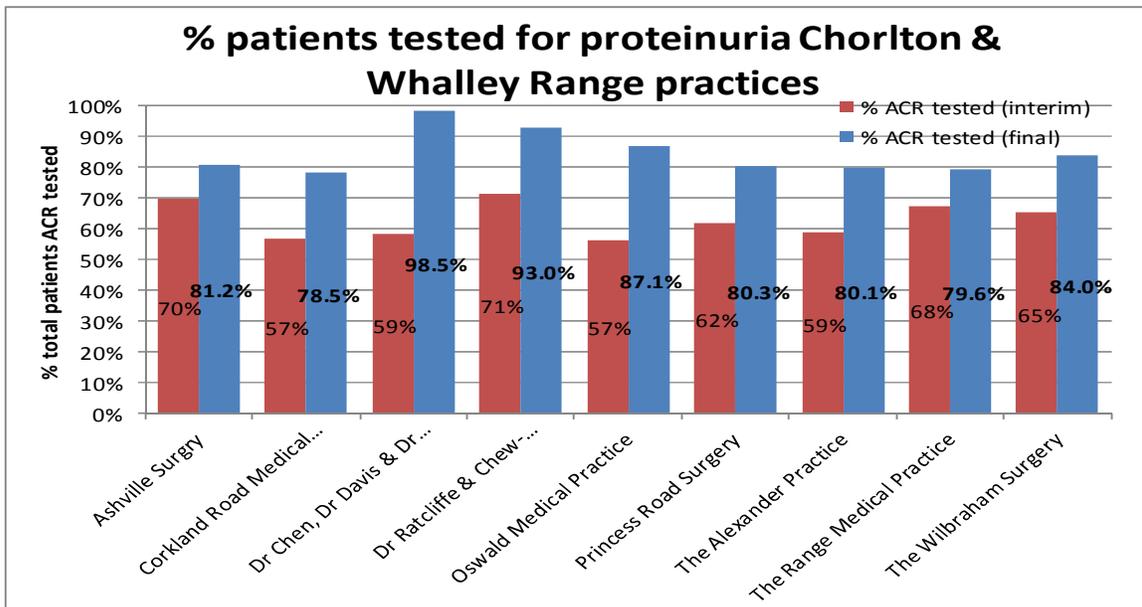


Figure 12 Shows the percentage of patients on the CKD register tested for proteinuria at interim and project end for Chorlton & Whalley Range practices

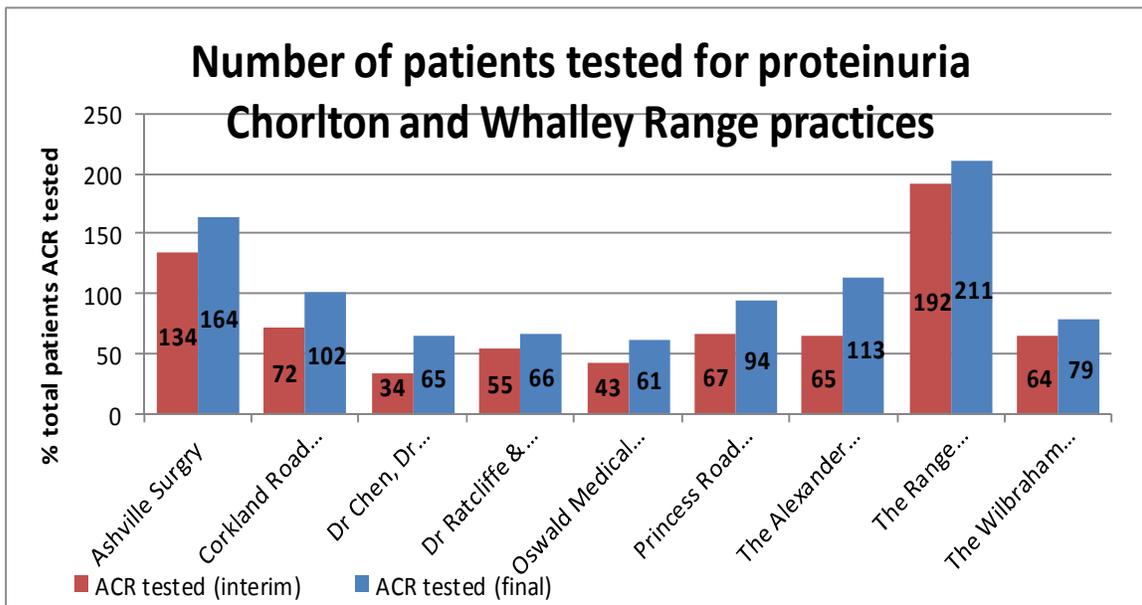


Figure 13 Shows the number of patients on the CKD register tested for proteinuria at interim and project end for the Chorlton & Whalley Range practices

3.2.2 Blood Pressure to Target

NICE advises that patients should not only be tested for proteinuria every 12 months, but should have their blood pressure managed according to the result. For patients who tested positive for proteinuria, the target blood pressure is $\leq 130/80$ mmHg. In those tested negative for proteinuria, the target blood pressure is $\leq 140/90$ mmHg. Therefore, patients needed an ACR test with the results coded and also a documented blood pressure to NICE guidelines to achieve this objective.

Collectively, the 12 practices achieved **72%** of CKD patients having their blood pressures managed according to NICE guidelines. There was a large disparity between the management of blood pressure in those CKD patients with and without proteinuria. On average for all 12 practices, **93%** of patients without proteinuria had blood pressures managed according to NICE guidelines. However, for those patients with proteinuria this figure is **47%**.

On an individual practice level, **6** of the **12** practices achieved objective two with at least 75% of all CKD patients having their blood pressure managed to NICE guidelines. **Again it is important to put these results into context as this objective can be difficult to achieve, particularly in practices with large CKD registers that added a significant number of newly diagnosed CKD patients, for example The Range added at least 63 newly identified CKD patients who required coding and adding to the register. These new patients may also require ACR testing and may need treatment initiated to manage their blood pressure. For all practices the number of new patients added will be higher than reflected in figures 8 and 9, as patients will have been identified who do not have CKD and consequently removed from the CKD register.**

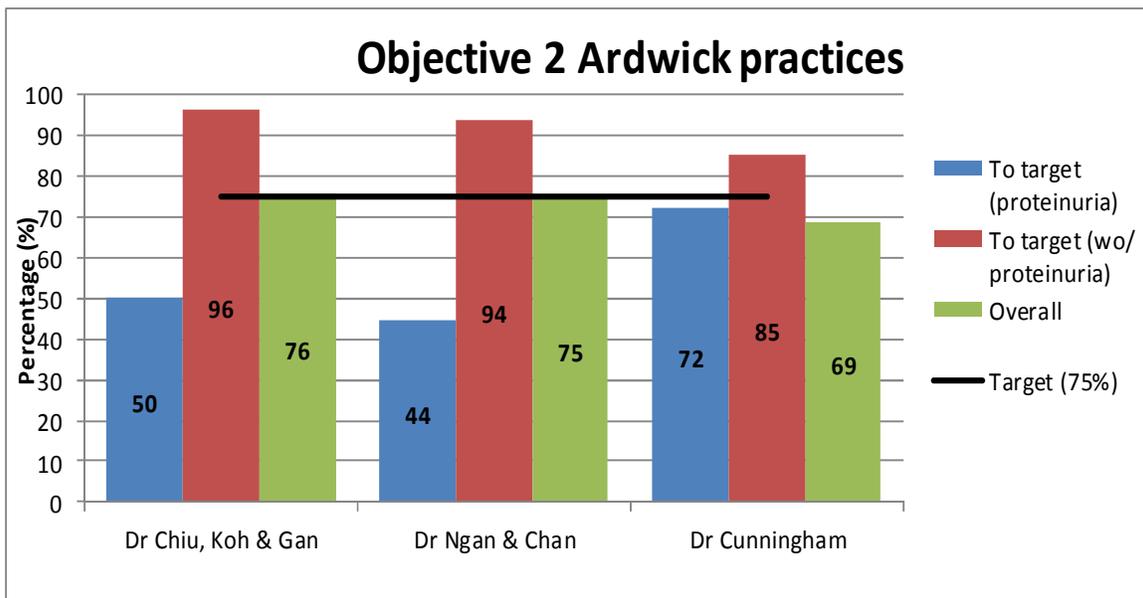


Figure 14 Shows the percentage patients with proteinuria with BP to target, those without proteinuria with BP to target and the overall percentage for objective 2 for the Ardwick practices

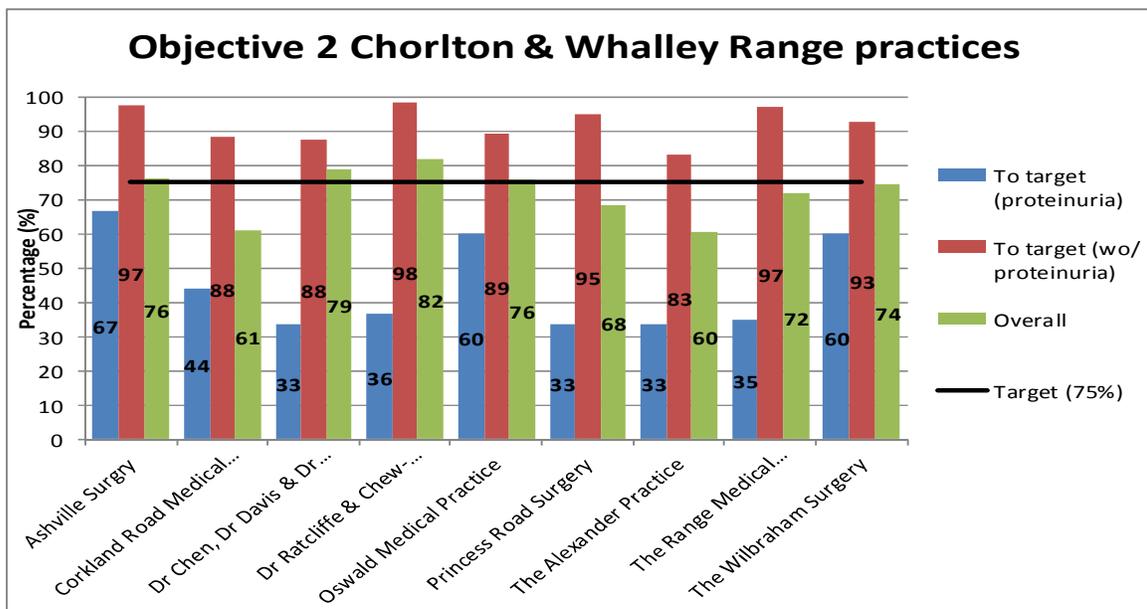


Figure 15 Shows the percentage of patients with proteinuria with BP to target, those without proteinuria with BP to target and the overall percentage for objective 2 for the Chorlton & Whalley Range practices

3.2.3 Management of Proteinuria Patients

The number of patients with proteinuria and blood pressures managed to NICE guidelines varied between practices ranging from 26% to 73% (See Figures 16 & 17). Overall 47% of this patient group had blood pressures managed to NICE guidance at the end of the project. This is broken down per practice in Figures 16 & 17. Although the number of CKD patients with proteinuria in each practice is low, the problem of managing blood pressure in this cohort of patients has been highlighted in previous phases of the CLARHC CKD project and is something that this project seeks to address (see recommendations).

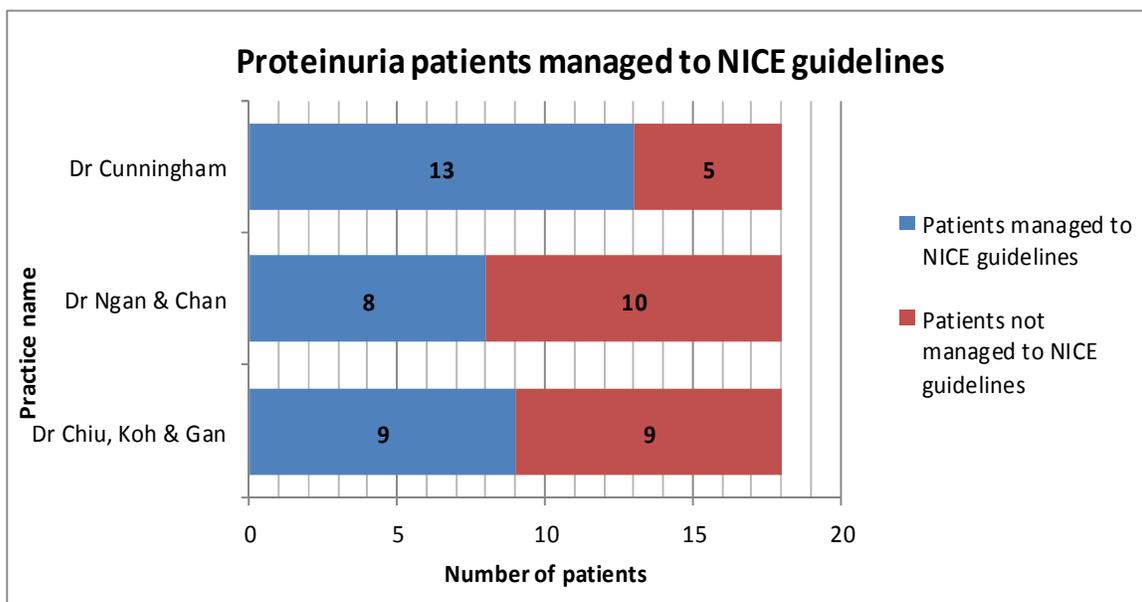


Figure 16 shows the total number of patients tested positive for proteinuria per practice for the Ardwick practices. Each bar is subdivided into those managed to NICE guidelines and those not managed to NICE guidelines.

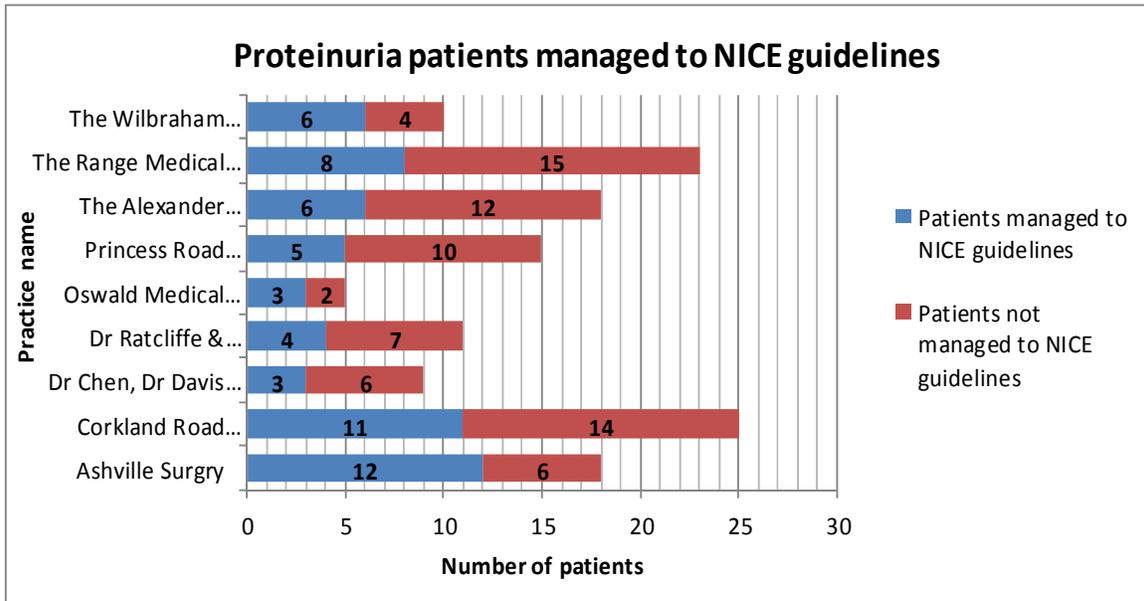


Figure 17 shows the total number of patients tested positive for proteinuria per practice for the Chorlton & Whalley Range practices. Each bar is subdivided into those managed to NICE guidelines and those not managed to NICE guidelines.

4. Case Studies

Case study - A

Context

Practices in Central Manchester experienced a high turnover of staff, and practices A and B were no exception. Both practices shared an improvement team which originally consisted of a single, highly-motivated practice nurse, a team of practice managers and a lead GP from each practice. After a short time, the practice nurse moved elsewhere and the project work fell to another highly-motivated practice nurse. Motivation was consistently high throughout which was fully attributable to the excellent level of engagement and the practice team's enthusiasm for improving CKD management.

Baseline

At baseline, the combined CKD register for A and B was 226, with a prevalence of 2.41% and 1.73% respectively. Age/sex profiles of each practice suggested that there were 40 patients who weren't on the CKD registers, across both practices. Practice A and B had a target prevalence of 2.94% and 1.96% respectively. With respect to management of CKD patients, both practice A and B had good baseline figures for the percentage of patients on the CKD register who had an ACR test within the preceding 12 months, at 74% and 72% respectively, which left some room for improvement.

Facilitation process

The majority of the work was managed successfully by the practice nurse. Facilitation meetings were arranged every 4-6 weeks in order to address any problems and see how the project work was progressing. Firstly, the coding of the patients was updated and any patients who required repeat tests were invited back in. Patients were then added to the register in order to improve the prevalence toward the expected, which resulted in a larger, more robust practice registers. The lead GPs became involved when addressing patient management, where the improvement team worked together to bring patients in for BP checks and repeat ACRs.

Case Study B

Practice B had a slow start due to staffing problems with a large turnover of staff. When the current practice manager came into post they organised the team very efficiently and this practice showed an excellent example of a team approach.

Teamwork

The practice manager coordinated the team and delegated tasks, for example, the FY2s did all the case finding and validation presenting the audit findings to staff at their clinical meetings. The phlebotomist contacted and retested the 50 patients identified as needing a retest to either confirm or exclude a diagnosis of CKD. The assistant practice manager contacted all the patients not yet ACR tested with BPs not to target to come into the surgery to see the HCA. The HCA saw the patients in her clinics and worked towards objective 2. The GPs discussed CKD with patients identified by the project, managed BPs not to target and increased the medication of those patients with proteinuria. Once the FY2 had completed their placement they handed the project over to the incoming FY2. At the CKD workshop all disciplines were represented; GPs, GP registrar, assistant practitioner, FY2s and medical students.

Case Study C

Some practices, that were not already using EMIS Web, were undergoing a computer system change at the start of the project timeline, and practice C fell into this category. Swapping over their computer system meant large time periods of training and getting accustomed to the new system, which was an early barrier to project facilitation. However, after an initial slow start, the improvement team, which consisted of a practice nurse, health care assistant and practice manager, managed to implement a strategy for adding patients to the CKD register and any patients who required repeat eGFR and ACR tests were contacted via mail, and any patient requiring a repeat BP was done so on home visits. Additionally, as there was minimal GP involvement, the practice nurse disseminated information about improving CKD coding and identification throughout the practice, which made a significant difference.

Baseline

Practice C were in the unique scenario of not being able to achieve objective 1, as there were not enough patients to add to register to meet the target. Practice C had a baseline CKD register total of 68 patients, with a target of 96 patients. In terms of CKD management, 57% of patients on the CKD register were ACR tested within the preceding 12 months.

Facilitation process

Progress was slow at the start of project, but engagement and enthusiasm for CKD improvement significantly improved after the CLAHRC CKD workshop. After this, the practice nurse really took over as the lead for the project at this practice, recruiting a highly-motivated health care assistant to the team and also implementing education measures for the GPs at the practice who may not have heard about the project otherwise. This came in the form of education materials covering CKD coding and also information about the project and its aims. There were regular facilitation meetings, establishing the progress of the work and what the next steps were.

Re-audit results

Despite only finding an additional 2 patients, they made significant improvements in CKD patient management. By the project end, the percentage of patients ACR tested within the preceding 12 months increased from 57% to 87.1%, one of the largest increases across the Locality. By the project end, 76% of patients were managed to NICE BP targets.

4. Conclusions

The CKD/Hypertension project in NHS Central Manchester CCG has raised the profile of CKD and educated healthcare professionals in the importance of managing it effectively. It has achieved the main objective of identifying CKD patients who were not previously coded with CKD, leading to improved care and management. In addition to this, it has also highlighted areas of CKD management which require improvement and could provide further work in order to ensure CKD management continues to improve and be sustained. The main conclusions which can be drawn from this project are:

- Practices achieved **92%** of objective 1 adding a total of **368 additional** patients to CKD registers. However, the number of new CKD patients identified will be significantly higher than this figure as practices also removed patients who did not have a diagnosis of CKD.
- The percentage of patients with blood pressures managed to NICE target was **72%**.
- On an individual practice level, **6** of the **12** practices achieved a percentage of 75% or above of CKD patients with blood pressures managed to NICE guidance.
- Management of patients without proteinuria was good with a total of **93%** of CKD patients having blood pressures to NICE target, although for patients with proteinuria this figure was lower at **47%**.

5. Recommendations

The following recommendations are made in an attempt to continue to improve the management of CKD and also to sustain the progress made so far:

- It is suggested that each practice runs the IMPAKT™ CKD tool on an annual basis to maintain an accurate CKD register.
- A third workshop will be held for the final phase of the project; Gorton and Levenshulme Locality and the remaining practices in the Ardwick and Longsight Locality. It is proposed that the invitation is extended to all practices in NHS Central Manchester to give staff who did not attend previous workshops and new staff the opportunity to attend.
- To identify barriers and enablers to the management of people with CKD and proteinuria CLAHRC are planning an evaluation of these patients in the 12 practices that completed this phase of the project. The evaluation will include quantitative and qualitative methodologies. The quantitative evaluation will involve auditing the records of patients with CKD and proteinuria. For the qualitative element, interviews will be conducted with GPs and practice nurses.

References

1. National Institute for Health and Clinical Excellence Chronic Kidney Disease, (2008) *National clinical guideline for early identification and management in adults in primary and secondary care*, National Institute for Health and Clinical Excellence: London
2. Drey M. Roderick P. Mullee M. et al., (2003) A population-based study of the incidence and outcomes of diagnosed chronic kidney disease, *American Journal of Kidney Disease*, 42, (4), p677–684
3. Whitfield M. and Holmes M. (2007), *A cost and clinical effectiveness evaluation of a disease management programme for Chronic Kidney Disease (CKD)*, School of Health & Related Research (SchARR) University of Sheffield, Sheffield: Sheffield
4. Tahir M.A. Dmitrieva O. De Lusignan S. Van Vlymen J. Chan T. Golmohamad R. Harris K. Tomson C. Thomas N. Gallagher H. (2011) Confidence and quality in managing CKD compared with other cardiovascular diseases and diabetes mellitus: a linked study of questionnaire and routine primary care data *BMC Family Practice* 12, 83
5. National expenditure data 2003/04 – 2010/11 (2011: Department of Health). Available online from <http://webarchive.nationalarchives.gov.uk>. Last accessed 11th April 2014
6. Kerr, M. “Chronic Kidney Disease In England: The Human And Financial Cost” (2012: Insight Health Economics). Available from <http://webarchive.nationalarchives.gov.uk>. Last accessed 25th October 2013
7. National Institute for Health and Clinical Excellence Chronic Kidney Disease, (2014) *National clinical guideline for early identification and management in adults in primary and secondary care*, National Institute for Health and Clinical Excellence: London
8. Quality and Outcomes Framework 2012/13. Available online from <http://www.ic.nhs.uk/statistics-and-data-ollections/audits-and-performance/the-quality-and-outcomes-framework> Last accessed 11th April 2014
9. De Lusignan S. Tomson C. Harris K. et al. (2011) Creatinine Fluctuation Has a Greater Effect than the Formula to Estimate Glomerular Filtration Rate on the Prevalence of Chronic Kidney Disease, *Nephron Clinical Practice*, 117, p213–224
10. [2011-2012 Programme Budgeting PCT Benchmarking Tool v1.1](http://webarchive.nationalarchives.gov.uk) (2012: Department of Health). Available online from <http://webarchive.nationalarchives.gov.uk>. Last accessed 11th April 2014

