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Collaboration for Leadership in Applied Health
Research and Care (CLAHRC) for Greater Manchester

Improving the identification and care of patients with CKD: Evaluation of a triple-phase project

NHS Ashton, Leigh and Wigan
&
NHS Wigan Borough Clinical Commissioning Group

September 2009 – November 2013

NIHR CLAHRC for Greater Manchester is a collaboration of Greater Manchester NHS Trusts and the University of Manchester, and is part of the National Institute of Health Research

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Executive summary

Project design

- A project designed to improve the identification and care of patients with chronic kidney disease (CKD) was initiated and delivered in three phases in NHS Ashton, Leigh and Wigan (succeeded by NHS Wigan Borough CCG) by the Collaboration for Leadership in Applied Health Research and Care for Greater Manchester (CLAHRC GM). The third phase was delivered in association with the NHS Ashton, Leigh and Wigan Public Health team, as part of their Quality, Innovation, Productivity and Prevention (QIPP) programme.

- Each of the three phases was 12 months in duration, and involved varying numbers of participating practices. Phase 1 was part of a wider 19 practice Collaborative-style intervention across four PCTs in Greater Manchester, including five practices from NHS Ashton, Leigh and Wigan (NHS ALW). Phase 2 was developed with NHS ALW as the primary focus, as such, 10 of the 11 practices involved were from NHS ALW. As the third phase was driven by local demand in the form of the QIPP programme in NHS ALW, all 12 practices were from a single locality within this borough.

- This evaluation measures the outcomes from the 27 NHS ALW practices formally engaged in the project. There have been small pockets of CKD work with five other NHS ALW practices outside of the project timeframe which have not been measured for the purposes of this evaluation. The coverage of 32 practices is about half of the number of practices in NHS ALW.

- At project initiation in 2009, a prevalence gap of c.2% between recorded and estimated cases of CKD had been established, and was seen as a key area to address in order to implement earlier diagnosis and a more controlled care pathway for CKD patients.

- Research had suggested that there was a widespread lack of confidence amongst primary care practices about how best to care for patients with CKD. Common problems identified included; diagnosing patients with an asymptomatic disease, doubts over whether CKD was a valid disease state or simply a natural aging process, providing the right care for patients with co-morbidities and knowledge of when CKD patients should be referred to secondary care.

- The intervention project had universal objectives at both practice and overall level across all three phases. These were to (1) halve the gap between recorded and estimated prevalence of CKD on practice registers, and (2) for 75% of all recorded CKD patients to be tested for proteinuria and for their most recent blood pressure reading to meet NICE recommended targets for CKD by the end of 12 months intervention.

- Phase 1 employed the Model for Improvement framework for delivery and utilised Plan, Do, Study, Act (PDSA) cycles to trial and measure improvement ideas in practice. As the work progressed it became increasingly guided by lessons and evidence from previous implementation sites. Learning Sessions were used in each project and are thought to have been a key factor in the successful translation of knowledge.

- Practice visits were conducted by project facilitators to implement the project. The effect of facilitation will be explained in the qualitative outcomes section. Facilitator visits to each practice were arranged flexibly depending on necessity and the availability of practice staff, but were conducted roughly every 4-6 weeks.

- CLAHRC GM developed a change package (IMPAKT™ CKD Improvement Guide) at the close of Phase 1 to support future implementation of the project. The IMPAKT™ CKD audit tool was introduced at the start of Phase 2 to support the spread project. The use of these two resources was very effective and IMPAKT™ will be used to support any future CKD implementation work.

Quantitative outcomes

- Over the three project phases participating NHS ALW practices identified 954 additional CKD patients:
    - Phase 1: 189 (170% of the stated target to halve the prevalence gap) in five NHS ALW practices
        - 1,324 additional patients identified in 19 practices across all four participating PCTs
    - Phase 2: 469 (159% of the stated target) in ten NHS ALW practices
        - 539 additional patients identified in 11 practices across both participating PCTs
    - Phase 3: 296 (160% of the stated target) in 12 NHS Wigan CCG practices

- This has resulted in the following prevalence increase in each phase of the project:
    - Phase 1: 1% increase from 4.3% to 5.3%
    - Phase 2: 1.2% increase from 4.6% to 5.8%
    - Phase 3: 0.8% increase from 5.2% to 6%

- Proteinuria acts as a risk multiplier for CKD patients, increasing their risk of vascular events. Testing for proteinuria was introduced as a QOF CKD indicator in 2009/10 and the following increases in recorded tests for CKD patients was observed:
    - Phase 1: 593 additional patients tested (733 of 989 (74%) recorded CKD patients at project close)
    - Phase 2: 736 additional patients tested (2,236 of 2,349 (95%) recorded CKD patients at project close)
    - Phase 3: 287 additional patients tested (1,766 of 2,167 (81%)* recorded CKD patients at project close)
        - *15 month upper time-limit applied to testing in Phase 3, no time limit in Phases 1 & 2.

- NICE (2008) recommends that blood pressure in CKD patients without proteinuria should be controlled to <140/90 mmHg. A tighter target of <130/80 mmHg was set for CKD patients with proteinuria. If patients hadn’t been tested for proteinuria then they were counted as an automatic fail against the second objective because proteinuria status hadn’t been established. The outcomes against Objective 2 were:
    - Phase 1
        - 40% of CKD patients with proteinuria were managed to BP target
        - 91% of CKD patients without proteinuria were managed to BP target
        - 74% of the CKD register overall was managed to the appropriate BP target
    - Phase 2
        - 48% of CKD patients with proteinuria were managed to BP target
        - 91% of CKD patients without proteinuria were managed to BP target
        - 83% of the CKD register overall was managed to the appropriate BP target
    - Phase 3
        - 48% of CKD patients with proteinuria were managed to BP target
        - 89% of CKD patients without proteinuria were managed to BP target
        - 71% of the CKD register overall was managed to the appropriate BP target

Qualitative outcomes

A number of semi-structured interviews were conducted by a member of the CLAHRC team at the close of Phase 2. These interviews uncovered some crucial insights into how the project had improved the care that the participating practices were providing to patients. The key findings from the report were as follows:

- The multi-disciplinary approach of the project had been key to its success
- A structured and sequential approach to the project had kept the work ‘bite-sized’ and manageable from a practice perspective
- Teams should be encouraged to share their learning with colleagues to embed the lessons
- The support provided by the CLAHRC facilitators was an essential ingredient to making change happen
- Having clinical expertise within that facilitation role is highly valued and respected by implementation sites
- Practices should be prompted to consider aspects of sustainability from the project outset
- Learning sessions were considered crucial by practices, not just for them to share good practice and learn from each other, but also to develop a sense of a ‘project community’ with a common goal.

1.1.1. Chronic kidney disease – why it matters

Chronic kidney disease (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 death[1]. A 2003 retrospective analysis of all patients newly diagnosed with CKD in Southampton found that 35% had died after five years, 46% of which were cardiovascular related[2]. However, diagnosing the condition early and managing patients' wellbeing is vitally 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 deaths[3]. Through earlier identification and then treating patients to slow disease progression they also estimated a saving of 97 dialysis years over five years; a projected cost of £2.7m, and a huge improvement in the quality of life for patients.

CKD can be regarded as a poor relation within the chronic disease 'family'. The figures above provide a demonstration that CKD is a strong indicator of vascular events, but 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 such as diabetes[4]. This confidence gap consequently causes a lack of clarity on how to provide best care for CKD; variation in practice; and worse still avoidance of treating CKD, often meaning that patients are not told about the diagnosis, nor called in for regular review.

As well as compromising the provision of best available care for patients, the current spend on CKD and related problems represents a huge financial burden for the NHS. Programme Budgeting data published by the Department of Health calculated that NHS expenditure on renal problems was £1.34billion in 2008/09[5]. 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 CCGs in England[6].

1.1.2. Outline of the problem in 2009

In the vast majority of cases, CKD can be managed routinely in primary care. CKD was entered onto the Quality and Outcomes Framework (QOF) in 2006, with NICE CKD guidelines released in 2008. These two factors supported an increase in the understanding and diagnosis of CKD in primary care, but models produced by the CLAHRC GM in 2009 suggested a 2% gap existed between recorded and estimated prevalence levels across Greater Manchester (GM), amounting to around 54,000 undiagnosed cases of CKD[7].

A shortfall of recorded cases was characteristic across the ten constituent GM PCTs, and in four of those, a 12-month Collaborative-style intervention project was established with 19 general practices to improve the early identification of CKD, and the care they provided for diagnosed patients. This report will focus on one of those PCTs, NHS Ashton, Leigh and Wigan (NHS ALW), where two further phases of CKD work followed the initial intervention. In NHS ALW, cross-referencing predictions with 2008/09 QOF data showed a prevalence gap of at least 1.7% with a recorded prevalence at that time of 4.3% across all practices. Based on an estimated prevalence of 6% in NHS ALW, 4,505 patients remained undiagnosed.

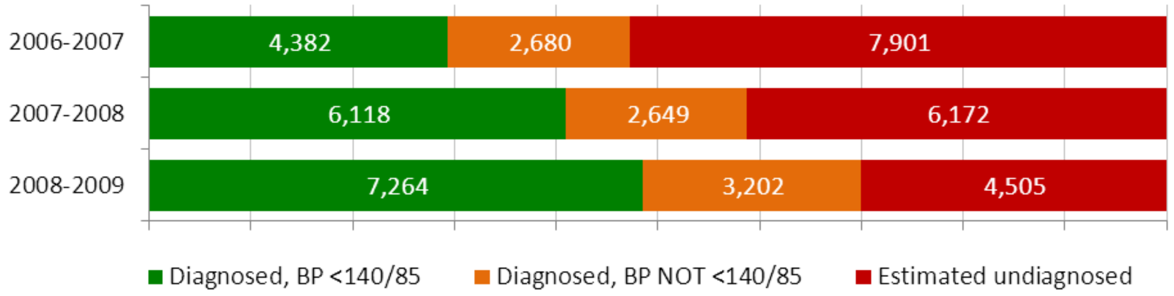

Figure 1: Identified gaps in diagnosis and care for CKD patients in 2009

The same QOF data also raised concerns about the quality of care provided for recorded CKD patients. In 2008/09, 3,202 (31%) of those patients recorded with CKD were not receiving appropriate care; i.e. they had poor blood pressure management or this had not been assessed recently. Coinciding with the initiation of this CLAHRC GM project, testing CKD patients for proteinuria was entered onto the QOF as a new CKD indicator in 2009/10. Proteinuria is a risk multiplier in CKD patients, increasing the likelihood of a vascular event[8].

The total ALW spend on renal problems in 2008/09 was £7,970,000. Of this, 94% (c.£7,491,800) was on secondary care costs, 6% (c.£478,200) on primary care[9].

The CLAHRC GM project was initiated to help address the problems outlined above. Although primary care records of CKD became a mandatory feature of the GP contract, and helped to address the problem of late referrals attending secondary care with end-stage kidney disease, Figure 1 above demonstrates that more needed to be done to support early identification of CKD with better management of the disease.

To tackle the recognised confidence gap in CKD management, a key aim of our work has been to bring CKD right up the agenda in participating practices and arm teams with the skills and confidence to diagnose patients accurately, reduce risk factors for decline in renal function and provide patients with information to support self-management of CKD.

CLAHRC GM used experiential learning from the project to develop effective resources to spread improvements in identification and care for CKD further across Greater Manchester using increasingly efficient methods of delivery.

1.2. Intervention project

At project initiation published information on the estimated prevalence of CKD was very limited, although it was generally accepted that ascertainment was on the low side as cases of renal replacement therapy (RRT) were increasing annually. The available data that was used to frame the project objectives came from the NEOERICA study. The East Midlands Public Health Observatory (EMPHO) used this data to publish estimated practice-level prevalence in England. The national average estimated prevalence was suggested to be around 8.5%.

After hosting an expert faculty meeting with representation made up of; local GPs, GPs with a renal interest, public health leads, renal physicians, and a patient representative. 2 primary objectives for the project were selected:

1) To halve the gap between recorded and estimated prevalence on practice registers
2) For 75% (no exception reporting) of CKD patients to be tested for proteinuria and managed to NICE blood pressure targets by the project close (NHS Bolton practices opted out of using this objective).

These two outcome measures were universal for all three phases of the project, and were modelled as overall targets, and per practice based on baseline data mapped against prevalence estimations.

1.3. Phase 1

1.3.1. Structure

Project Approach: The first phase of the project ran from September 2009 – September 2010. It was designed as a 12 month Collaborative-style project based on the Institute for Health Improvement's (IHI) *Breakthrough Series: Model for Improvement*.[10] Built into our project design were three full-day Learning Sessions, with a closing Summit workshop.

The Learning Sessions punctuated the action periods for teams to complete their improvement work – and were used as a forum for teams to share ideas around any problems they were encountering with the work and help each other with solutions to these, as well as an opportunity for teams to direct specific questions to renal specialists, feed back progress on the work to project stakeholders, and let the CLAHRC team provide refreshers on the evidence for the work and deliver further evidence for change to teams.

During the action periods, Knowledge Transfer Associates from CLAHRC GM would perform site visits to practices. These visits were in-part to implement evidence to close translation gaps in practice identified at the Learning Sessions, by establishing plans to address them in a practice specific context. They would also help teams to establish small tests of change using the Plan, Do, Study, Act (PDSA) methodology to attempt their next cycle of improvement. The frequency of visits would be around every 4-6 weeks but fluctuated slightly based on progress with the work, and availability of the team members at each practice. The project duration was September 2009 – September 2010.

CLAHRC implementation team: The CLAHRC implementation team was structured as follows, two clinical leads who were Renal Physicians, an Academic Lead who advised on the context and evidence to facilitate implementation, a Programme Manager, a Service Improvement and Systems Analyst, and two Knowledge Transfer Associates (KTAs). Only the two KTAs worked full-time on the CKD project, covering two PCT areas each.

Implementation site teams: Each practice was asked to select a mix of staff disciplines to work on the project, which usually involved a lead GP, a practice nurse, and an administration team member (usually the practice manager).

Changes to the specified project: In May 2010, about halfway through Phase 1, feedback from teams suggested that some practices were losing motivation because there was a growing consensus that the NEOERICA (NEw Opportunities for Early Renal Intervention by Computerised Assessment)[11] study prediction of estimated CKD prevalence was too high. At the time of publication the study report had suggested that this may be the case. CLAHRC GM re-convened their expert faculty where the decision was taken to update our evidence base and use the outcomes of the QICKD (Quality Improvement in Chronic Kidney Disease)[12] study which had just been completed, which suggested that the average national prevalence was c.6%. The diagnostic criteria for this study was more in line with NICE guidelines and offered us what we saw as more robust and realistic prevalence expectations. We were given access to a modelling tool which was created using the outcomes of the published study which allowed us to estimate prevalence figures per practice based on their age/sex profile data. Targets for teams were re-modelled in accordance with this new data (see Table 1).

1.3.2. Participants

Phase 1 of the work involved 19 practices from four PCTs (number from each in brackets). They were from NHS Ashton, Leigh and Wigan (5), NHS Salford (5), NHS Stockport (5), and NHS Bolton (4). This report will focus on the five practices from NHS ALW. Practices from ALW were sent an invitation to join the project, which was co-signed by the Medical Director for the PCT, David Valentine, who was the Senior Sponsor for the project in ALW. Responses were then sifted to provide the greatest variety of practices from which to develop an evidence-based change package.

	Model	Baseline 18+ years population	Baseline prevalence	Baseline CKD register	Target prevalence	Target CKD register	Patients to find	Estimated prevalence	Estimated CKD register
Dicconson North Wigan	NEOERICA	6,580	5.3%	347	7.0%	460	113	8.7%	573
	QICKD	6,587			5.6%	368	21	5.9%	389
Dr CP Khatri TABA	NEOERICA	3,641	4.2%	152	6.1%	223	71	8.1%	142
	QICKD	3,705			4.8%	179	27	5.6%	207
Dr K Khatri TABA	NEOERICA	2,630	4.3%	113	5.7%	150	37	7.1%	187
	QICKD	2,616			4.5%	118	5	4.7%	123
Drs Russell & Kumar Patient Focus	NEOERICA	3,301	2.5%	82	4.2%	139	57	5.9%	196
	QICKD	3,210			3.3%	106	24	4.0%	130
Elliott Street TABA	NEOERICA	2,589	4.1%	106	6.8%	175	69	9.4%	244
	QICKD	2,622			5.3%	140	34	6.6%	174
ALW overall	NEOERICA	18,741	4.3%	800	6.1%	1,147	347	8.0%	1,494
	QICKD	18,740			4.9%	911	111	5.5%	1,022
Phase 1	NEOERICA	105,388	4%	4,185	6.3%	6,592	2,407	8.5%	8,999

overall	QICKD	107,972			5.2%	5,626	1,441	6.5%	7,067

Table 1: Participant NHS Ashton, Leigh and Wigan practices, and prevalence target modelling using NEOERICA (Sept 2009) and QICKD (May 2010)

One of the key distinctions between the NEOERICA and QICKD modelling was the number of eGFR tests used to model the prevalence on. NEOERICA was modelled on patients within the CKD range based on a single eGFR reading, the QICKD dataset was based on two or more readings in the same patient. This naturally reduced the estimated prevalence by excluding patients with a single low reading. When this re-modelled dataset was presented to practices it was received as a far more realistic estimation of prevalence.

1.3.3. Phase 1 outcomes

Objective 1

Prevalence outcomes were measured against the revised QICKD data set. The five practices in NHS ALW were comparatively smaller than the majority of practices involved in the overall project. These five practices also had a slightly higher collective baseline prevalence of 4.3%. These two factors combined meant that they had a smaller number of patients to identify in order to halve their prevalence gap. Indeed, the five practices achieved this overall by the end of the second month of the project – going on to identify 189 additional patients overall, 170% of the number required to halve the estimated prevalence gap.

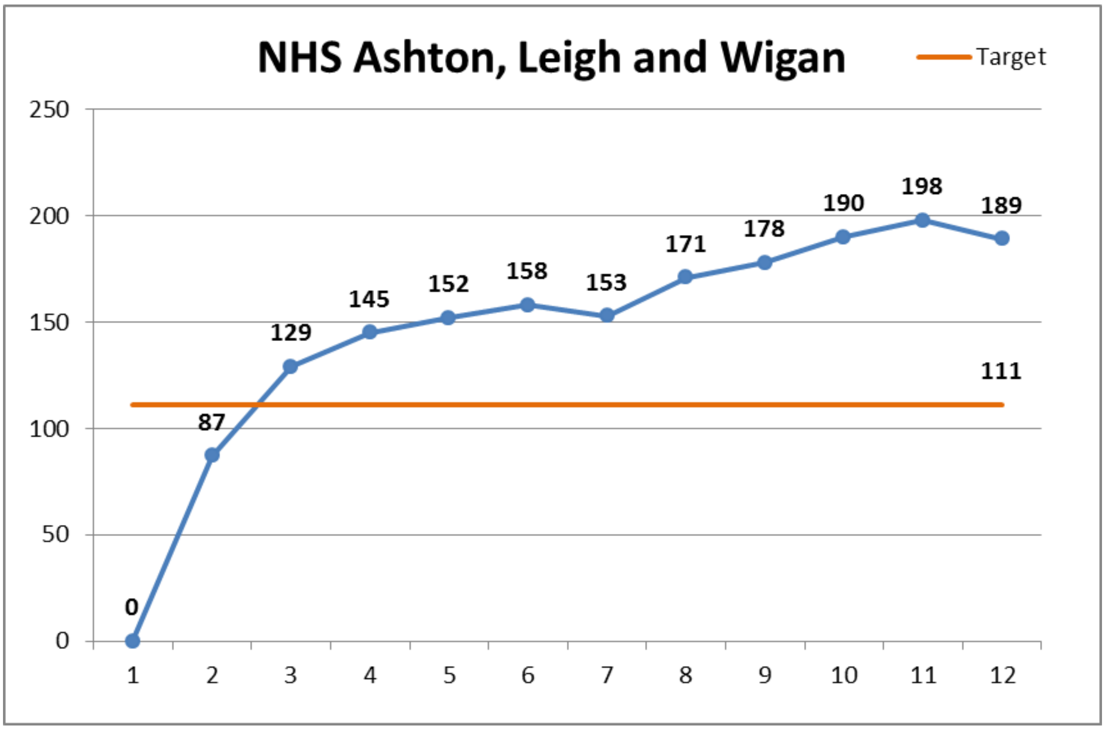

Figure 2: Additional CKD patients against baseline register size in NHS ALW

All five practices in NHS ALW achieved their individual practice objective of halving their prevalence gap. However, although the variation in the number of patients added per practice was only 37 (61 at Dicconson, 24 at K Khatri) (see Figure 3); the variation in the percentage of patients identified vs. practice target was much greater. This ranged from 113% (Russell & Kumar) to 480% (K Khatri).

There was also wide variation in the time it took each practice to achieve their individual targets to halve their prevalence gap. This was achieved as early as the second month of the project by Dicconson and K Khatri, but only during the final month by Russell & Kumar. Given that the numbers to find per practice were not vastly different, this difference in the speed of identifying 'missing' CKD patients is harder to pinpoint but indicates that additional dynamics must influence the adoption of improvement work in practice. Potential reasons could be that those practices that achieved the target more quickly had a more accurate baseline register that required less validation; made better use of available resources to support improvement, or perhaps demonstrated more cohesive teamwork.

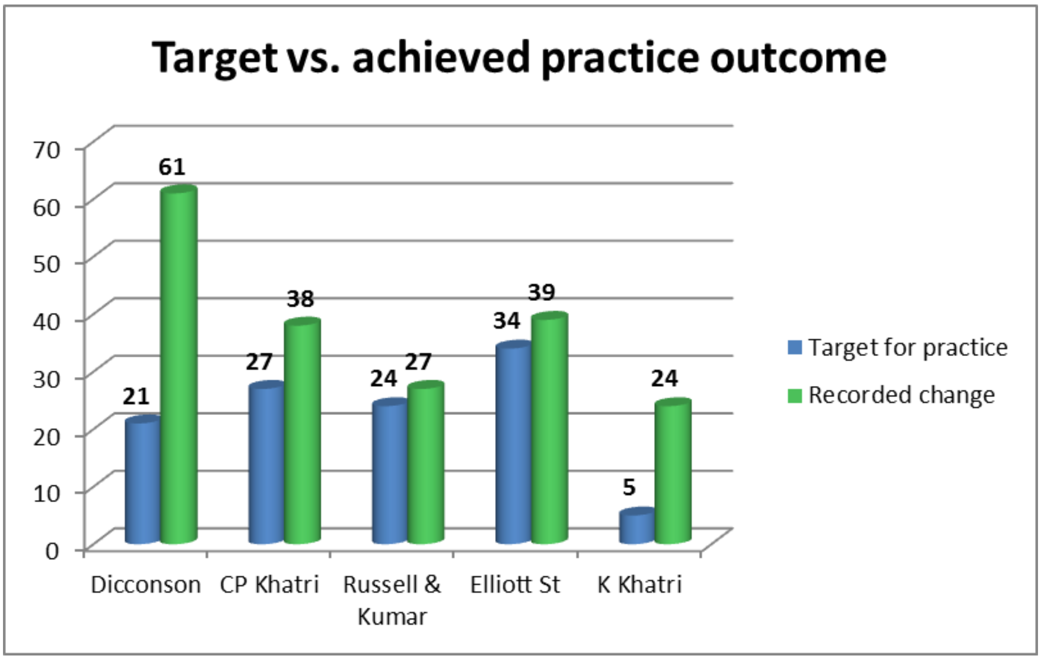

Figure 3: Breakdown per practice of additional patients required at baseline to halve prevalence gap vs. achieved outcome

Overall, 1,324 additional patients were recorded on CKD registers across the 19 practices at the close of the project. This was 92% of the overall target needed (1,441 patients) to halve the prevalence gap. Figure 4 shows the breakdown of the number of patients identified in each PCT. Although the five ALW practices identified the fewest number of additional patients overall, they achieved the second highest percentage of patients added vs. target register size. The highest achiever in this respect was Bolton (199%); the lowest was Salford (61%). Again, the variation in this achievement is not easy to account for as practices in all areas received similar levels of facilitation and tested similar improvements. The change in the recorded number of patients was 4,185 at baseline to 5,509 at the project close.

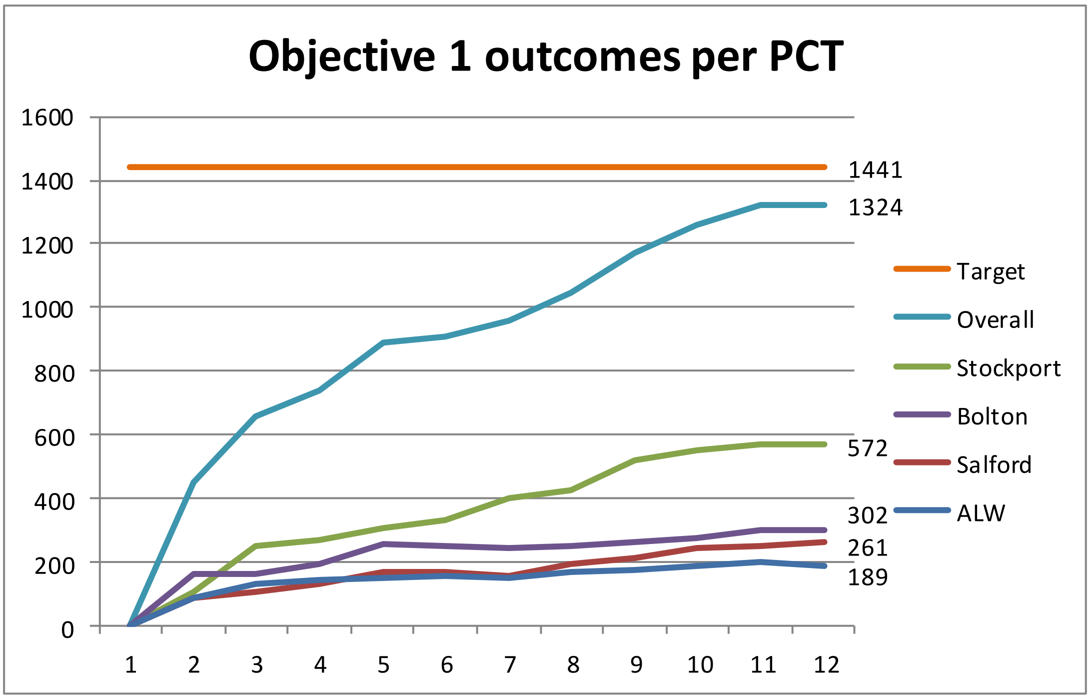

Figure 4: Outcomes in additional CKD patients per PCT and overall

Objective 2

Testing CKD patients for proteinuria every 15 months (through ACR or PCR tests) became a QOF CKD indicator (CKD6) in 2009/10 coinciding with Phase 1 of the project. ACR testing did occur in some CKD patients before this point, but this practise was not standardised before this point. Therefore, practices had a very low baseline achievement for this measure at the start of the project, with only 33% (294) of CKD patients tested for proteinuria in the five NHS ALW practices in the first month that this data was reported. This had improved to 90% (887) at the final data submission for the project (Figure 5).

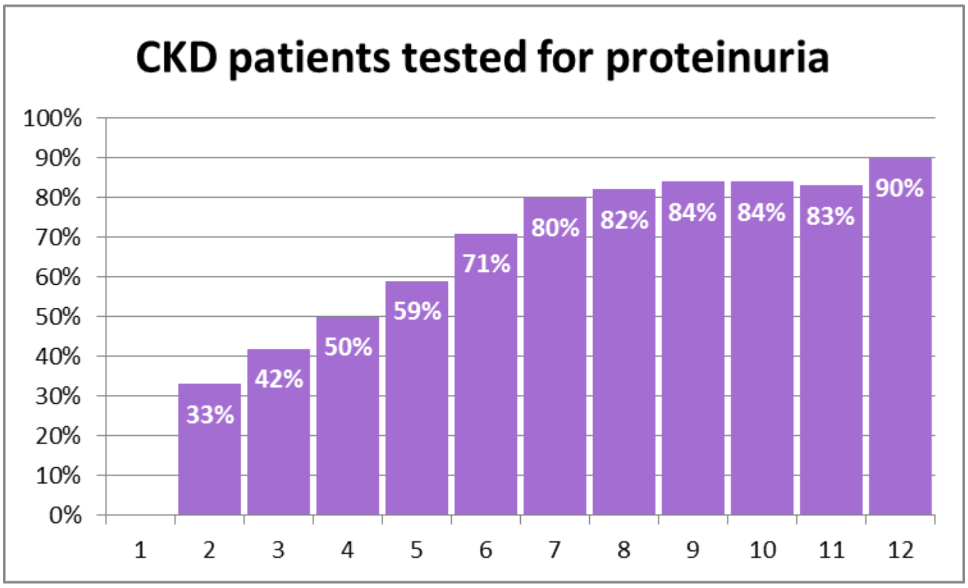

Figure 5: Change in percentage of CKD patients tested for proteinuria

NICE advises that patients should have their blood pressure managed according to the result of their test for proteinuria. Therefore, patients had to have a test for proteinuria recorded with the result coded in order to be considered as achieving the second project objective. Any CKD patient without a test for proteinuria counted as an automatic fail for this measure.

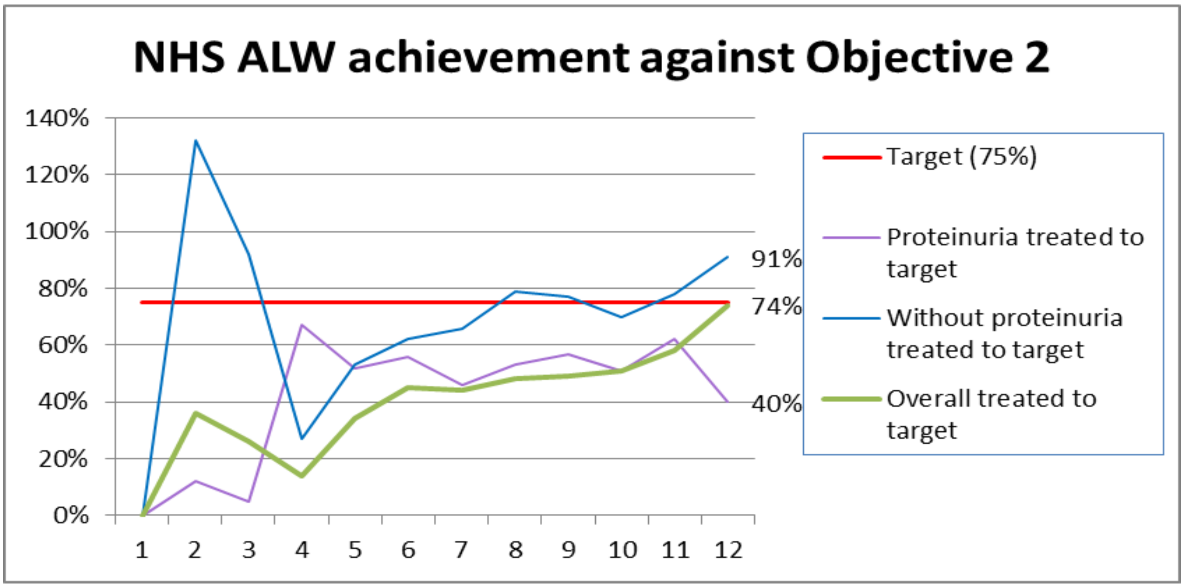

Figure 6: Percentage of patients achieving blood pressure objective

In NHS ALW, 733 (74%) of the 989 registered CKD patients had a test for proteinuria on record with their result coded, and had their blood pressure controlled within the recommended range (Figure 6). There were however, large disparities in patients with/without significant levels of proteinuria. Of those with proteinuria, only 27 (40%) were controlled to <130/80 mmHg, whilst 706 (91%) of those without proteinuria achieved a blood pressure of <140/90 mmHg. Also, wide variations were present amongst the five practices in NHS ALW (Figure 7).

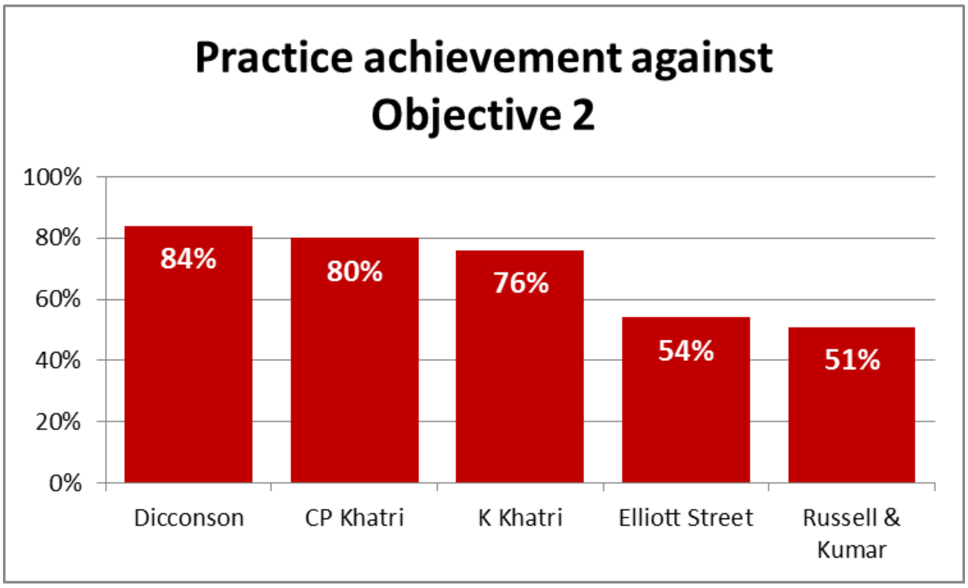

Figure 7: Per practice achievement against Objective 2 in NHS ALW

The trajectory of the run chart in Figure 6 (CKD patients without proteinuria treated to target) and the wide variations in blood pressure outcomes for the five practices do raise some doubts about the accuracy of the data returned for the second objective. There were issues in establishing these searches on various clinical systems which were not quickly resolved at some practices.

Across the overall project, NHS Bolton elected not to use this objective for their four practices. In the remaining 15 practices, 74% of patients (3,051 out of 4,147) had been tested for proteinuria and achieved NICE blood pressure targets.

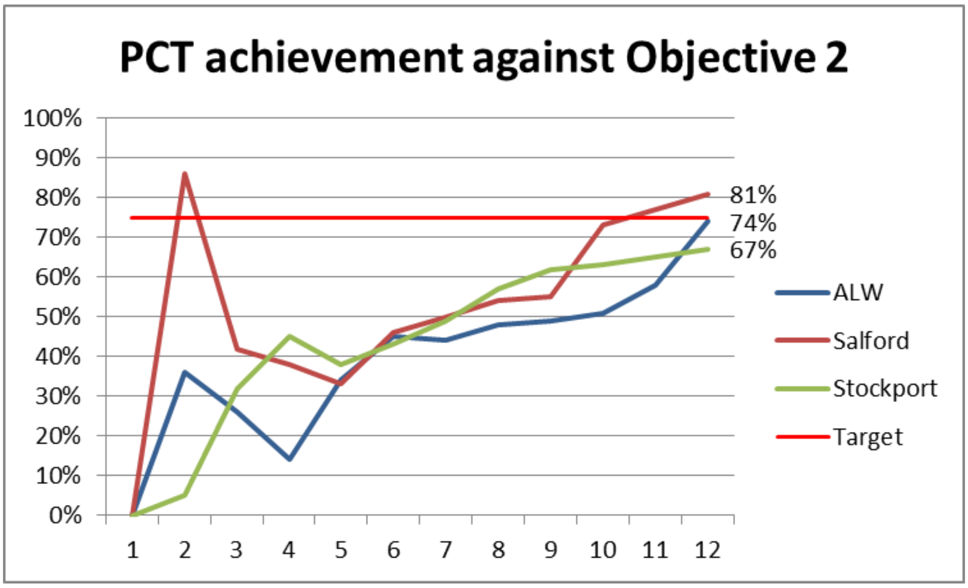

Figure 8: PCT achievement against Objective 2

The outcomes of the project were promising and we felt that with some refinements we could take the project to a spread phase and implement the evidence to a further cohort of practices. Internal structural changes and significant alterations to funding arrangements for CLAHRC GM necessitated a revision of our implementation approach to future work.

1.4. Phase 2

1.4.1. Changes in approach/structure

Phase 2 changed in scope from coverage of four PCTs and instead focused on working with practices from two PCT areas in a more concentrated model. NHS Stockport withdrew from partnership working with CLAHRC because they had insufficient available funds to continue, and NHS Bolton chose to control their own spread project. Rather than try to establish the project in other areas the decision was taken to target greater numbers of practices in smaller areas. This would help practices to build on their existing links to share improvements. Financial constraints necessitated a move away from strict adherence to the Collaborative methodology framework with fewer and shorter Learning Sessions – and so we hoped to maintain the shared learning ethos of the project by building on a pre-existing ‘community of practices’.

The CLAHRC GM implementation team from Phase 1 put together a ‘problems and solutions’ document to capture the practical barriers to change that we had encountered during the project but would’ve have been difficult to know or predict pre-project. We collated potential solutions for each of these areas for a spread phase to problem solve more pro-actively. These covered themes such as accuracy of data collection and measurement, understanding the practice culture (through Bate Assessment[13]/Context Assessment – see Appendix A), and engaging senior/influential partners and practice staff at each practice, providing the right tools for teams to make improvements quickly, timing of certain sections of the project, and updating our improvement tools (i.e. PDSA sheets – see Appendix B) to be more project specific and less generic.

A number of changes and tweaks were made to fit the changing context within which the project was to be implemented, these are listed below.

Key changes for Phase 2:

Contextual adjustment of the Collaborative methodology: Our project budget could not support a repeat of the three full-day Learning Sessions that formed part of Phase 1. Instead, we scheduled two half-day Learning Sessions, for the start and halfway point of the project, culminating with a closing Summit meeting to share the project results with practices and stakeholders. We also added five one-hour WebEx sessions to support the project. The dates for these were provided to teams at the start of the project so that they could book out time to dial in. The majority were held on Wednesday lunchtimes, and we selected the topics for them based on what lessons and support the teams would benefit from at that time. Secondary care renal specialists were used to support the sessions to provide clinical guidance to teams.

Key Project Dates		Topics
Wednesday 2nd March 2011	Learning Session 1	Outline of project, aims and objectives, Phase 1 achievements
Wednesday 18th May 2011	WebEx 1	Progress update, register validation, identifying any early problems
Wednesday 28th June 2011	WebEx 2	Responses to queries so far, identifying high-risk patients, making the most from teamwork
Wednesday 10th August 2011	WebEx 3	Audit of CLAHRC CKD patient booklet, identifying and managing proteinuria in CKD patients
Wednesday 7th September 2011	Learning Session 2	Progress report, evidence for managing proteinuria and lowering blood pressure, team planning
Thursday 3rd November 2011	WebEx 4	Clinical case studies
Wednesday 18th January 2012	WebEx 5	Sustaining your improvements
Wednesday 25th April 2012	Summit Meeting	Feedback of results, cost analysis report, clinical impact of work, interviews and case studies with improvement teams

Figure 9: List of key events in the project timeline

***Introduction of the IMPAKT™ CKD audit tool** (www.impakt.org.uk):* After closing our initial project we established a co-operative link with the Leicestershire, Northamptonshire and Rutland (LNR) CLAHRC which also had a programme focused on implementing improvements to CKD care. LNR CLAHRC had developed a CKD audit tool which provided patient level advice on coded and uncoded potential CKD patients. This tool had the potential to improve the way we delivered the project to teams. The local data quality support managers agreed to support the installation of the CKD audit tool in all participating practices.

Seconded practice nurse support: At the close of Phase 1 a practice nurse who had worked at two of the implementation sites had indicated that she would like to continue her development around CKD and specialise in the disease area. The nurse was recruited by CLAHRC on a secondment basis for two days a week as an additional facilitator to support the implementation of the Phase 2 project. It was anticipated that this addition to the team would provide additional clinical peer support to the improvement teams.

IMPAKT™ CKD Improvement Guide: We produced a change package for practices based on field evidence collated from implementing Phase 1 of the project. A hard copy was given to each practice that joined the project to use as a support tool for learning. It contains many useful resources such as CKD Read codes, protocol examples, and template invitation letters practices can send to patients for diagnostic tests. The guide is available for download from the CLAHRC GM and IMPAKT™ websites.

The Improvement Guide featured the driver diagram (Figure 10) which contained all of the areas of improvement we wanted to cover with each implementation site in Phase 2 over the 12 month duration – and was developed from our evidence of implementing the initial project.

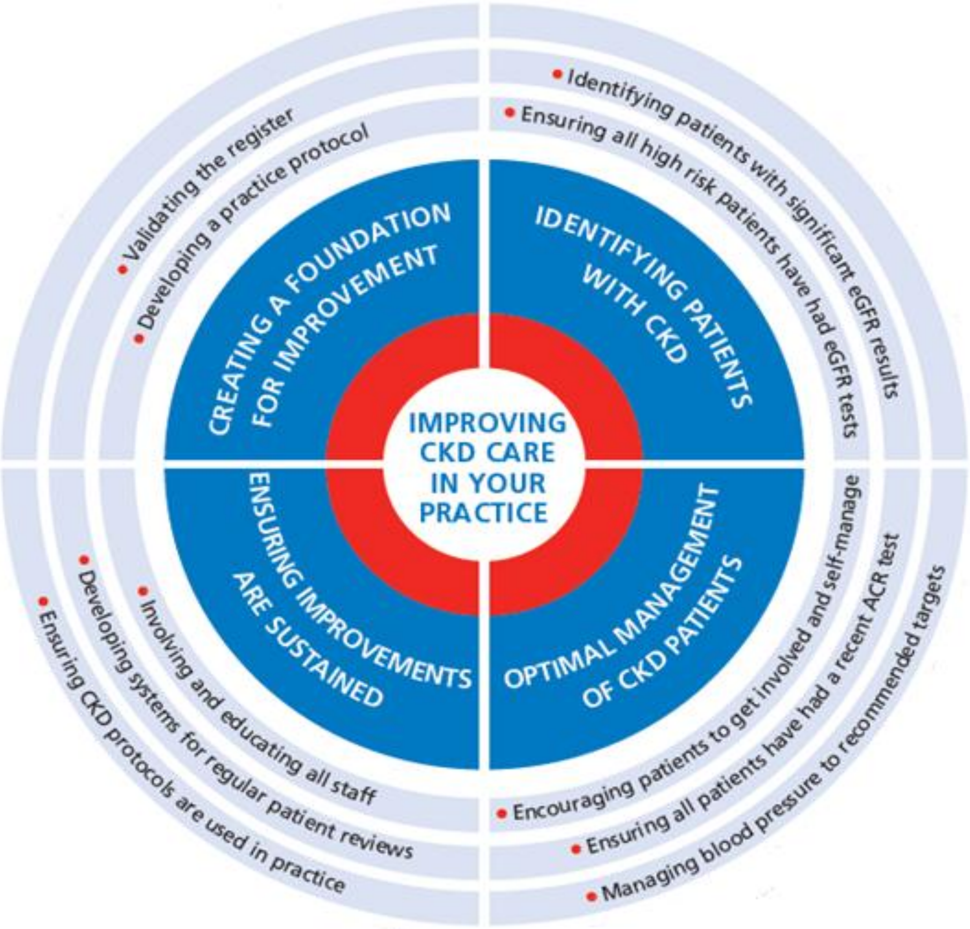

Figure 10: Driver diagram designed for Phase 2

1.4.2. Participants

Practice recruitment for the follow-up project in NHS ALW started in late 2010. We had worked with three practices from the TABA locality group during Phase 1. The remaining eight practices in this group were keen to focus on CKD as a local priority and all agreed to participate during a locality group meeting. A practice in a separate locality group then joined as they had heard positive feedback from Phase 1 teams.

A mirror spread project in NHS Salford struggled to gain the same momentum, and so a sole practice from Salford joined the ALW project (their figures will be excluded from this report). A few months into the project, a further practice from NHS ALW requested to join the project despite the shorter timeframe for their team to implement change. As a result, we worked with ten NHS ALW practices during Phase 2. The project duration was March 2011 – March 2012.

Locality *(Consortium)*	**GP Practice**	**Improvement Team Composition**
NHS Ashton, Leigh & Wigan *(TABA)*	Astley General Practice	General Practitioner Practice Nurse Administration Clerk
	Bee Fold Medical Centre	General Practitioner Practice Manager
	Boothstown Medical Centre	General Practitioner Practice Nurse (x2) Administrator
	IntraHealth Tyldesley & Atherton Health Centres	General Practitioner Practice Nurse Healthcare Assistant (later replaced by a Nurse Practitioner)

	Leigh Family Practice	General Practitioner Practice Nurse Healthcare Assistant Clinical Coordinator
	Meadowview Surgery	Practice Nurse Practice Manager
	Dr Sivakumar & Dr Gude	General Practitioner Practice Nurse Healthcare Assistant Practice Manager
	Dr JC Thompson	General Practitioner Healthcare Assistant Practice Manager
NHS Ashton, Leigh & Wigan *(North Wigan)*	Shevington Surgery	General Practitioner Practice Nurse (later replaced, due to maternity leave, by another practice nurse) Practice Manager
NHS Ashton, Leigh & Wigan (AtherLeigh and Patient Focus)	Hawkley Brook Surgery	General Practitioner Practice Nurse Healthcare Assistant

Table 2: Participant NHS ALW practices in Phase 2 of the CKD project

We were satisfied based on the outcomes of Phase 1 that the QICKD modelling tool provided us with a much more accurate indication of estimated CKD prevalence. Therefore we asked each practice to complete an 18+ years age/sex template at project baseline so that we could model an estimated prevalence for their practice, and established the number of patients each practice would need to identify in order to halve their prevalence gap. Overall, this group of practices had a slightly higher starting prevalence than those in Phase 1, reflective of the upward trend in recorded prevalence across all NHS ALW practices, which had increased from 4.2% in 2008/09 to 5% in 2010/11 (QOF), around the same time as project baseline for Phase 2. These figures are modelled as if the final practice which joined the project part way through had been involved throughout.

The prevalence gap was estimated to be in the region of 1.4% (574 patients). We challenged the 10 practices to halve this gap by finding at least 295 of this estimated figure.

	Baseline 18+ years population	Baseline prevalence	Baseline CKD register	Target prevalence	Target CKD register	Patients to find	Estimated prevalence	Estimated CKD register*
Astley General Practice	2,053	3.3%	67	3.5%	72	5	3.67%	75
Bee Fold Medical Centre	1,585	6.1%	96	6.6%	105	9	7.09%	113
Boothstown Medical Centre	4,991	2.1%	105	4%	200	95	5.84%	291
IntraHealth Tyldesley/Atherton	2,725	3.5%	95	4.3%	117	22	5.11%	139
Leigh Family Practice	5,505	3.9%	217	4.7%	259	42	5.54%	305
Meadowview Surgery	3,781	6.9%	262	6.9%	263	1	6.87%	260
Dr Sivakumar & Dr Gude	3,054	7%	215	6.1%	186	-29	5.19%	158
Dr JC Thompson	3,758	4.8%	180	5.8%	218	38	6.84%	257

Shevington Surgery	10,405	4.5%	464	5.5%	572	108	6.44%	671
Hawkley Brook Surgery	2,769	6.5%	179	6.6%	183	4	6.67%	185
ALW Phase 2 overall	40,626	4.6%	1,880	5.4%	2,175	295	6.0%	2,454

*Note that some practice targets are not exactly half of estimated prevalence. Estimated prevalence was rounded to 1d.p. for each practice from which the target was calculated. Meadowview was given a nominal target as the rounded estimate was exactly equal to the baseline register number.

Table 3: Participating NHS Ashton, Leigh and Wigan practices, and prevalence target modelling

1.4.3. Outcomes

Objective 1

The ten practices in NHS Ashton, Leigh and Wigan identified an additional 469 CKD patients during the project. This figure comfortably exceeded the targeted increase of 295, achieving 159% of Objective 1 of the project. The numbers identified per practice ranged from -12 (Dr Sivakumar and Gude's) to 117 (Boothstown). The negative change in diagnosed cases for Sivakumar's was in line with pre-project modelling, which suggested that the practice had more diagnosed cases of CKD than would be expected for their age/sex demographic. This was largely due to a large number of patients who had been incorrectly diagnosed using a single eGFR reading.

Indeed, this was something that one of the new features of this project, the IMPAKT™ CKD audit tool, allowed us to identify and support teams with during the validation stage of the work. Prior to that, teams had no accurate way of determining if a patient had been incorrectly coded with CKD without interrogating each patient's record individually, and we had no mechanism for ensuring that each team had been able to accurately remove incorrectly coded CKD patients from their CKD registers. As a consequence, we know that the actual figure of newly identified CKD patients was considerably higher than 469, because a significant number were also removed during the project.

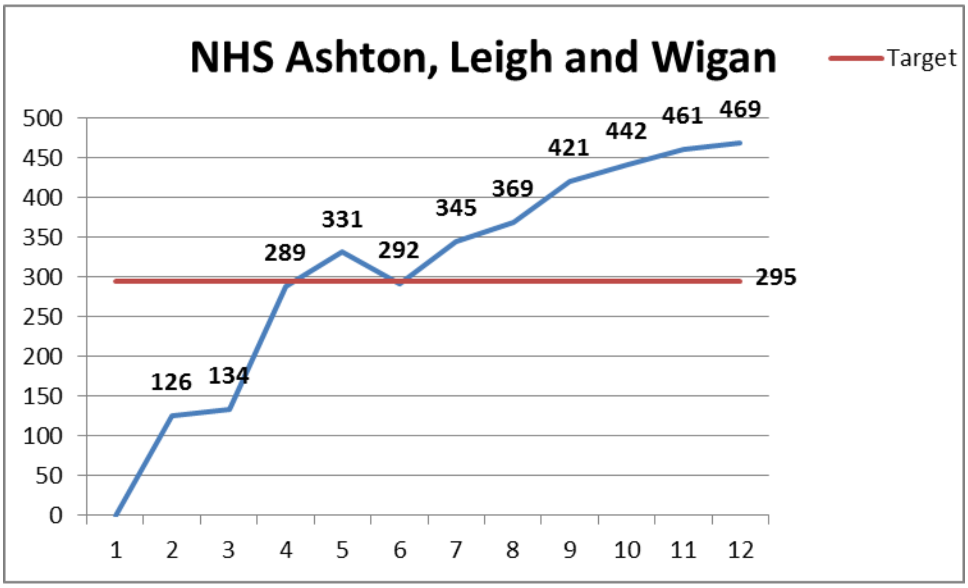

Figure 11: Number of additional patients against baseline register size in Phase 2 practices

Of these ten practices, six met their individual practice targets of halving their prevalence gaps. 2 of these ten implementation sites had a baseline prevalence that complicated the process of achieving this target. These were (1) the aforementioned Dr Sivakumar and Gude which we estimated to have an over-diagnosis of CKD (and as such were given the unique target of reducing their register size by half of the 'excess'), and (2) Meadowview Surgery which had a baseline prevalence size that almost exactly matched our prevalence modelling for their population. The latter practice was given a nominal target of increasing their register size by one patient. The different emphasis of improvements for these two practices shouldn't mask the body of work conducted during the project, which was comparable with other practices.

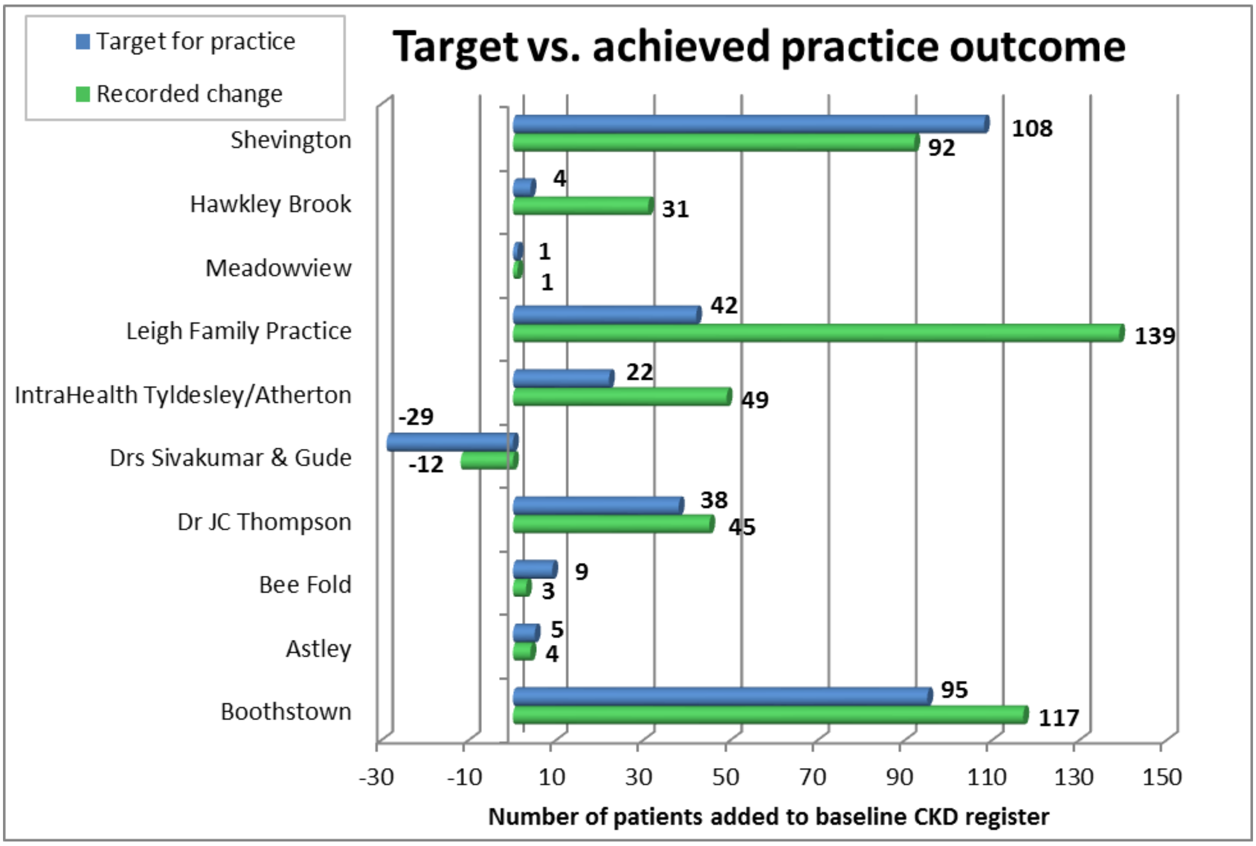

Figure 12: Breakdown of target per practice of change required at baseline to halve prevalence gap vs. achieved outcomes

The large range in number of patients found per practice was reflected in the wide variation of recorded prevalence at the close of the project. Astley had the lowest recorded prevalence at 3.5%, Hawkley Brook the highest at 7.6%. This is not indicative of the range in achievement, and largely reflects the estimated prevalence modelled for each practice (Figure 13). The modelling produced what appeared to be fairly accurate predictions of prevalence, but there were some practices where the lack of adjustment for deprivation score may have reduced its accuracy. For example, Leigh Family Practice and Hawkley Brook identified considerably more patients than they were estimated to have, in comparatively deprived areas. However, Shevington, despite finding many additional patients, couldn’t identify the number required to halve their estimated prevalence gap. The practice had a substantial number of older patients, but is located in one of most affluent boroughs of Wigan.

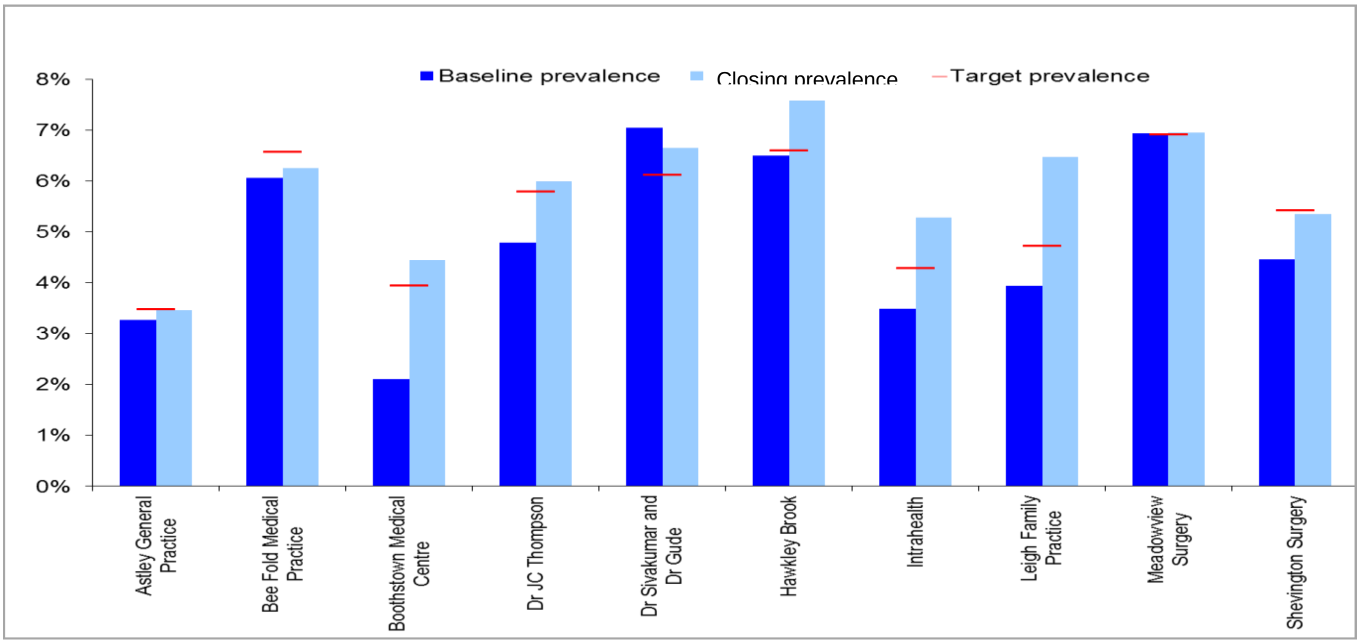

Figure 13: Baseline prevalence per practice vs. prevalence at project close

Objective 2

Testing CKD patients for proteinuria (at least once every 15 months) had been established as a QOF CKD indicator for two years by the initiation of Phase 2, and practices were much more into the routine of performing this regularly than at the outset of Phase 1. Therefore, the baseline figure of CKD patients tested for proteinuria (92%) was considerably higher than in Phase 1. Figure 14 shows how this measure decreased markedly as new patients were added to the CKD registers in the early months of the project – but how teams worked to screen these newly found patients and recorded an impressive 95% testing rate by the project close. Like with Phase 1, we did not put a time limit on the most recent test for proteinuria in our measures. 2,236 of 2,349 patients were tested for proteinuria by the project close.

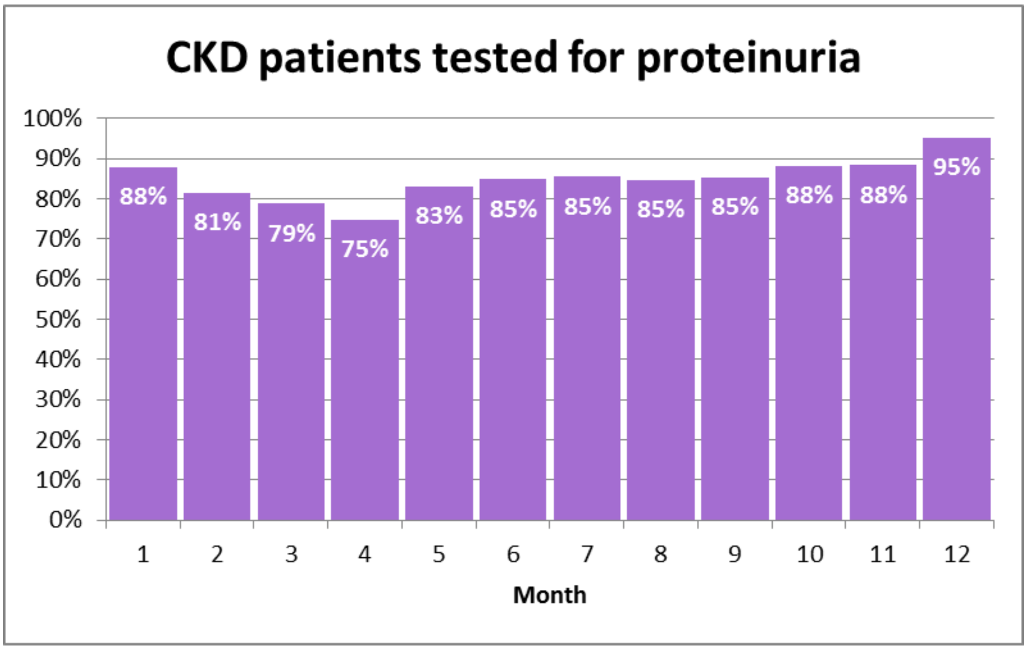

Figure 14: Change in percentage of CKD patients tested for proteinuria

As with the Phase 1 work, if patients did not have a test for proteinuria on their record, then they could not be counted towards the blood pressure measure. Therefore, only 2,470 of the recorded CKD patients could possibly achieve this measure.

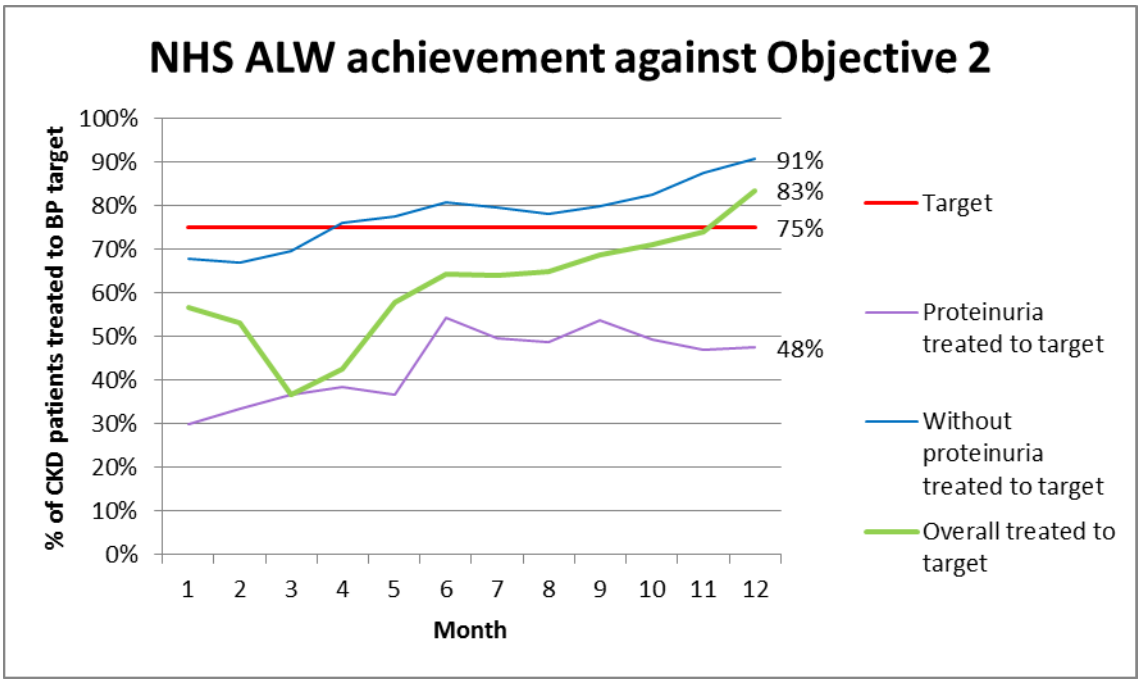

Figure 15: Percentage of patients achieving blood pressure targets

In these ten practices, 1,960 (83%) of the 2,349 recorded CKD patients had been tested for proteinuria and had their most recent blood pressure reading recorded within NICE recommended targets. Just as with the Phase 1 results, a large difference in outcomes was recorded for patients with and without significant levels of proteinuria. Of those CKD patients with proteinuria, only 76 (48%) were controlled to <130/80 mmHg, whilst 1,884 (91%) of those without proteinuria achieved a blood pressure of <140/90 mmHg. Both of these measures were a slight increase on comparable outcomes from Phase 1 (8% and 2%, respectively). The overall outcome of Objective 2 was a 9% increase on the Phase 1 result.

Encouragingly, the wide variation in outcomes for Objective 2 amongst practices in Phase 1 (Figure 7) was not repeated in this project (Figure 16). Our strong reservations as a team about the integrity of data submitted from practices had informed our decision to perform a manual data count at the end of Phase 2 to ensure that the outcome data was more reliable and accurate. The huge reduction in outcome variation can in some way be attributed to this data being collected manually. This also ensured a consistency in collection methods practice-to-practice.

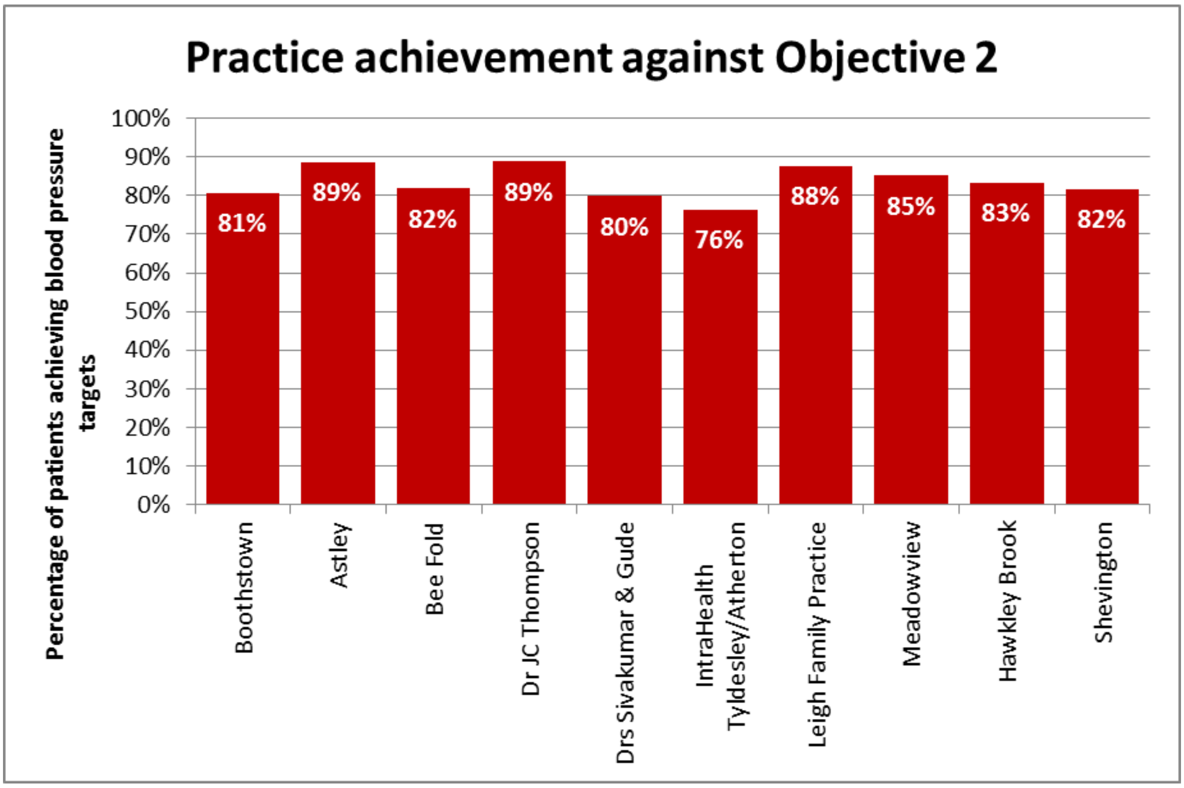

Figure 16: Per practice achievement against Objective 2 in NHS ALW

During the closing months of this project, the local Public Health team in NHS Ashton, Leigh & Wigan PCT approached CLAHRC GM about running a further phase of improvement work in the borough as part of their Quality, Innovation, Productivity, and Prevention (QIPP) programme, for which CKD had been identified as one of four project streams where intervention work could help lead to future cost containment. This modified structure again required some adjustment of the implementation approach.

1.5. Phase 3

1.5.1. Changes in approach/structure

With this phase running under the QIPP programme in NHS ALW PCT, it was designed and scoped to only include practices from this PCT area. CLAHRC GM continued to fund the hours of the seconded practice nurse, and provided the previously developed implementation tools (i.e. IMPAKT™ audit tool and Improvement Guide) to support delivery of the project. Project management responsibilities were split between the two organisations.

The joint management approach moved the project further away from the Collaborative methodology framework that had underpinned the previous two phases (this had already been modified slightly between phases 1 and 2, as explained on page 12). This framework had utilised a Learning Session at phase initiation, and further Learning Sessions at set points throughout the phase, creating the opportunity to engage with practices and allowing them to share ideas on common problems in the identification and care for patients with CKD. The Learning Session at phase baseline was discontinued for the third phase. The WebEx sessions, which created a similar interactive forum for practices in earlier phases were also removed from third phase of the project.

In Phase 3, the seconded practice nurse now acted as the primary facilitator with practices, with facilitation support provided by the CVD Programme Assistant within the NHS ALW PCT team. The Knowledge Transfer Associate from the core CLAHRC GM team facilitated practice meetings only as cover when necessary and instead assumed more of a co-ordination role; arranging and managing installation of the IMPAKT™ CKD audit tool, organising materials for the implementation work, and collecting, hosting and processing data submitted by practices.

During the closing months of Phase 2 of the programme, CLAHRC GM had entered into a formal collaboration with CLAHRC LNR to develop implementation tools from each organisation and integrate them into an all-inclusive CKD package (IMPAKT™) that would be hosted on a website available for all practices to access. IMPAKT™ would underpin the project and frame improvements for practices to make as with the previous phase. The project to develop IMPAKT™ as an integrated package ran simultaneously with the third phase of the CKD project.

The duration of this phase was October 2012 – October 2013. About halfway through the implementation of this phase, a simultaneous improvement project on CKD was initiated in Central Manchester. Two additional practice nurses from a previous implementation phase (Phase 2) were recruited to the CLAHRC GM team to add extra capacity. Two of the three seconded practice nurses supported the implementation of the project in NHS ALW.

1.5.2. Participants

On assessing the efficacy of having a geographically concentrated group of practices involved in the second phase of implementation work, we felt that the pre-existing community of practice that had been present amongst the eight TABA practices had been an important factor in the cohesion and commitment to the project from the group. With that in mind, we hoped to replicate a similar model for this phase of implementation. We spoke to the leads of the ALPF locality group which had 24 member practices concentrated in and around Wigan and Leigh. 2 practices from this group had participated in previous phases of CKD improvement work (Hawkley Brook and Russell & Kumar) and acted as advocates for the project for their peers.

CLAHRC GM and NHS ALW presented the project proposal at an ALPF locality group meeting in May 2012 sharing outcomes from previous projects and offered availability for a similar number of practices in the proposed phase as in the previous one. Practice take up was slower than in the previous phase. As a consequence, this phase was the first time that staggered start dates were applied, and practices worked to slightly different project durations.

	Baseline 18+ years population	Baseline prevalence	Baseline CKD register	Target prevalence	Target CKD register	Patients to find	Estimated prevalence	Estimated CKD register*
The Grange	2,486	6.3%	156	6.4%	158	2	6.42%	160
Lilford Park	2,634	4.1%	107	4.6%	122	15	5.23%	137
***Dr Esa**	2,083	4.0%	83	4.7%	97	14	5.32%	110
***Dr Lewis**	2,268	5.0%	113	5.7%	130	17	6.46%	147
***Dr Maung**	1,621	5.2%	85	6.2%	101	16	7.17%	116
***Dr Martin**	2,108	5.8%	123	6.2%	130	7	6.50%	137
***Dr Doublet-Stewart**	2,244	5.4%	121	6.0%	135	14	6.62%	148
**Grasmere Surgery total*	*10,324*	*5.1%*	*525*	*5.7%*	*593*	*68*	*6.43%*	*659*
Dr Trivedi's	4,257	3.0%	129	3.8%	163	34	4.6%	195
Hindley	5,151	6.9%	356	7.0%	361	5	7.09%	366
†Shakespeare	1,629	6.6%	107	5.6%	92	-15	4.83%	79
Brookmill	6,780	4.6%	315	5.9%	402	87	7.22%	490
†Marus Bridge	3,036	5.8%	176	5.4%	164	-12	5.03%	153
Phase 3 overall	36,297	5.2%	1,871	5.7%	2,056	185	6.17%	2,238

*Note that Grasmere Surgery is split over five different practices codes assigned to individual GPs. Therefore, the objectives and outcomes for this site were calculated both individually and cumulatively. Therefore, there are references to either the five individual practices or the collectively named Grasmere Surgery during this evaluation.

†2 practices in this group had an estimated prevalence lower than their baseline recorded figure, and therefore were not given a number of additional patients to identify, with work instead focusing more on validation of the existing CKD register.

Table 4: Participating NHS Wigan Borough CCG practices and prevalence target modelling

This phase of work had a 0.6% higher overall baseline prevalence than Phase 2 (4.6%). A similar difference was noticeable between the Phase 1 baseline (4.3%) and Phase 2. Therefore, we can conclude there was a pre-existing rise in recorded CKD prevalence already taking place outside of the project work. This explains why despite only c.4,000 fewer patients in the Phase 3 practices overall compared with Phase 2, there were considerably smaller numbers of patients to find for each practice to achieve Objective 1.

The 12 practices were challenged to identify 185 additional CKD patients over the 12 months to halve the estimated prevalence gap and reach a recorded prevalence of 5.7%.

1.5.3. Outcomes

During the manual data count at the close of Phase 2 it became apparent that a number of patients on the CKD register had records of tests for proteinuria, or of blood pressure having being measured, which were quite dated and without a repeat within the recommended timeframe suggested by the NICE CKD guidelines (12 months), or used in the QOF CKD indicator measures (15 months[‡]). Because we relied on electronic data submission in Phase 1, and had not considered the implications of using timeframes for these measures prior to initiation of Phase 2, no timeframe was applied in that phase either. However, at the initiation of Phase 3 we felt as a team that it was important to begin applying these timeframes in line with recommendations. We applied a 15 month timeframe to these two measures because they reflected the QOF measures, and knew that using data already present on the practices' clinical systems would make monthly data collection easier and more reliable.

Other than applying timeframes to the existing measures, the project objectives remained the same.

Objective 1

The 12 practices involved in this phase identified an additional 296 CKD patients over the 12 months. This figure comfortably exceeded the target increase of 185 patients, achieving 160% of Objective 1 for the phase.

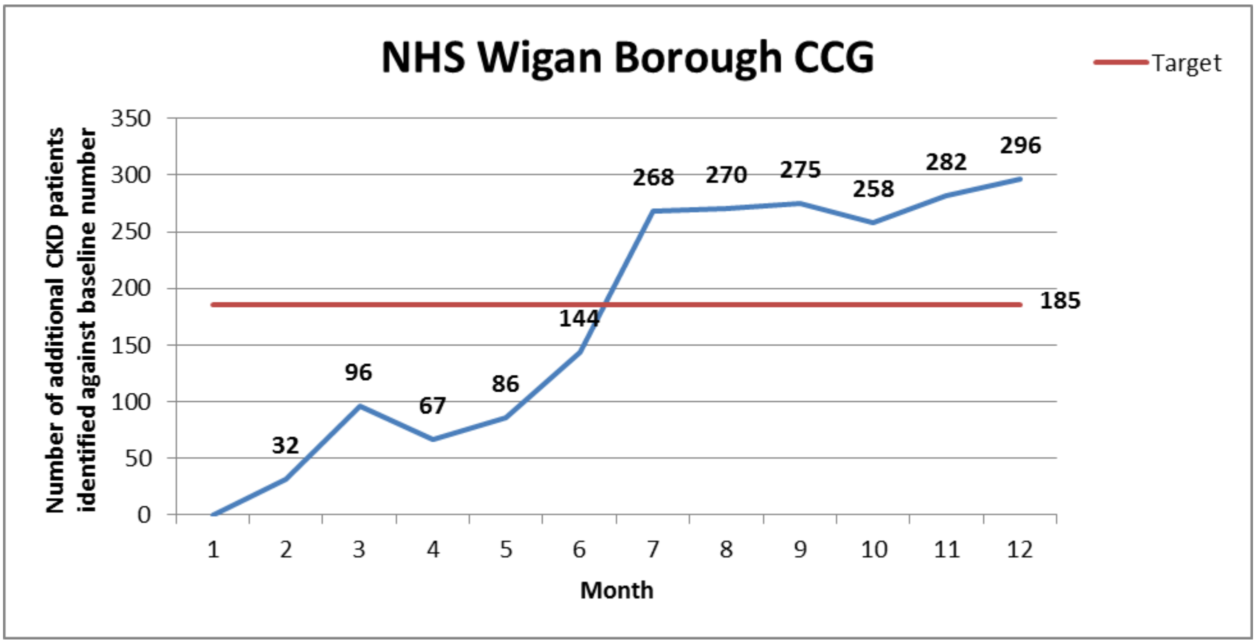

Figure 17: Additional CKD patients against baseline register size

Compared with the previous phase, which had utilised the same implementation tools and approach, the achievement against the objective of halving the prevalence gap was highly comparable. There was only a 1% difference in outcomes

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[‡] In April 2013, during the course of this project, the timeframe for both of these indicators was reduced on the QOF CKD indicators from 15 months, to 12 months. We retained the 15 month timeframe for the objectives in this project as that had been the timeframe at project initiation.

against this measure. However, the rate of achievement in halving that gap was slower than in the previous phase. This can, in part, be attributed to the staggered start dates that occurred in this phase. As a result, some practices did not make a start on the project work until considerably later than others.

There was also some delay in progress with three of the practices because the IMPAKT™ CKD audit tool was less compatible with the clinical system that was installed in these practices. This caused some inconsistencies in audit outcomes that hadn't been encountered before. We decided not to remedy these issues with IMPAKT™ as the system in question, Synergy, had already been earmarked for decommissioning. Therefore, we limited the reliance on IMPAKT™ for the work in these practices until the practices had a new system installed, SystmOne, at which point we ran the IMPAKT™ tool again at these practices.

Of these 12 practices, ten were required to find additional patients in order to achieve their individual practice targets of halving their prevalence gaps (Figure 18). 7 of these ten practices achieved that objective. As with the previous phase, two (Shakespeare and Marus Bridge) of these 12 implementation sites had a higher baseline recorded prevalence than their modelled estimated CKD prevalence. The two preceding projects had suggested that although the prevalence modelling tool provided a good indicator for expected CKD prevalence for a practice, that there was still some unexplained variation in accuracy. The most likely varying factor is deprivation score, as that isn't accounted for in the modelling equation, but is thought to have a bearing on incidence of CKD. Although Figure 18 suggests that the two practices were challenged to reduce their CKD register in order to take them closer to their estimated figure, this was in fact just used as an indicator that prevalence may decrease upon register validation work.

Figure 18 shows that there was a wide variation in practice outcomes for the identification of additional patients. This ranged from -13 (Hindley) to 137 (Brookmill). Interestingly, the two practices who might have been expected to end the project with fewer CKD patients given their relatively high recorded baseline prevalence both recorded an increase in detected cases.

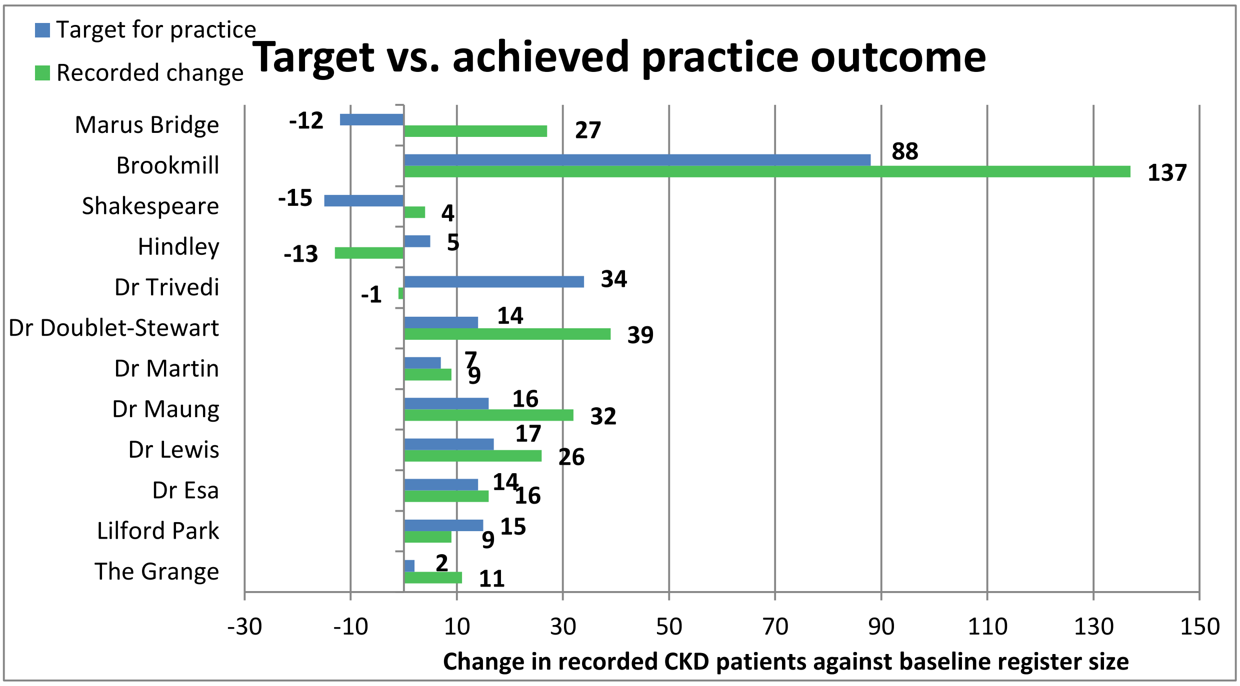


Figure 18: Recorded change in number of CKD patients per practice vs. target change for project

Figure 19 shows us the range in recorded prevalence at the start and close of the project in relation to the individual practice targets. The lowest recorded prevalence for both baseline and the close of the project was at Dr Trivedi's surgery, where 3% was recorded for both baseline and close. Shakespeare Surgery had the largest recorded prevalence at project close with 6.8%, although four other practices had very similar figures at 6.7%.

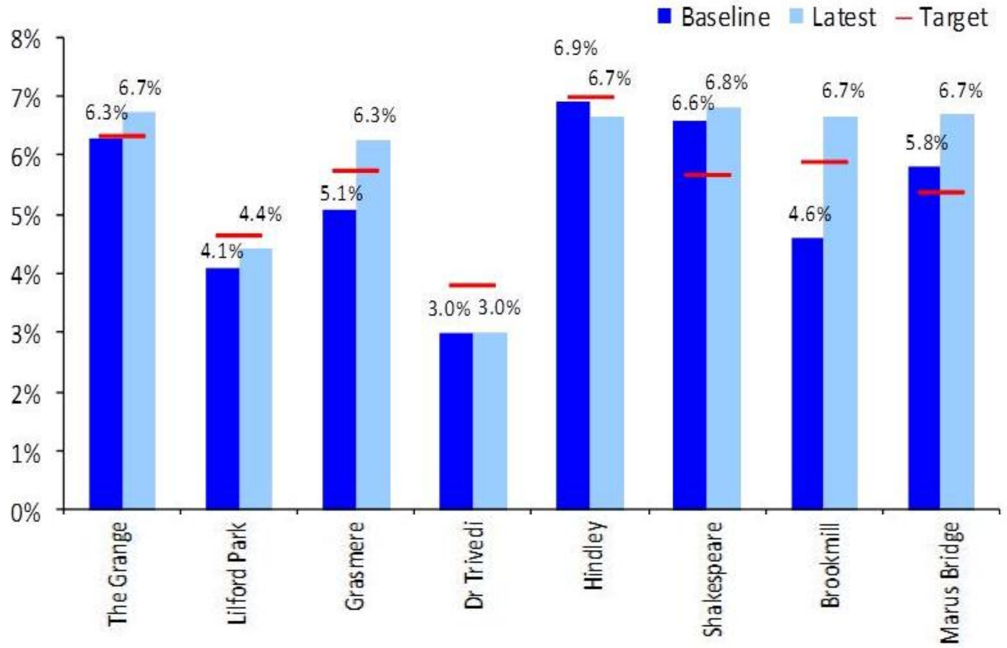


Figure 19: Baseline prevalence per practice vs. prevalence at project close

Objective 2
Having agreed that a timeframe should be applied to the data used to calculate outcomes for this objective, patients could only qualify if they had received a test for proteinuria in the last 15 months (or had a clear repeated pattern of negative tests slightly outside this timeframe).

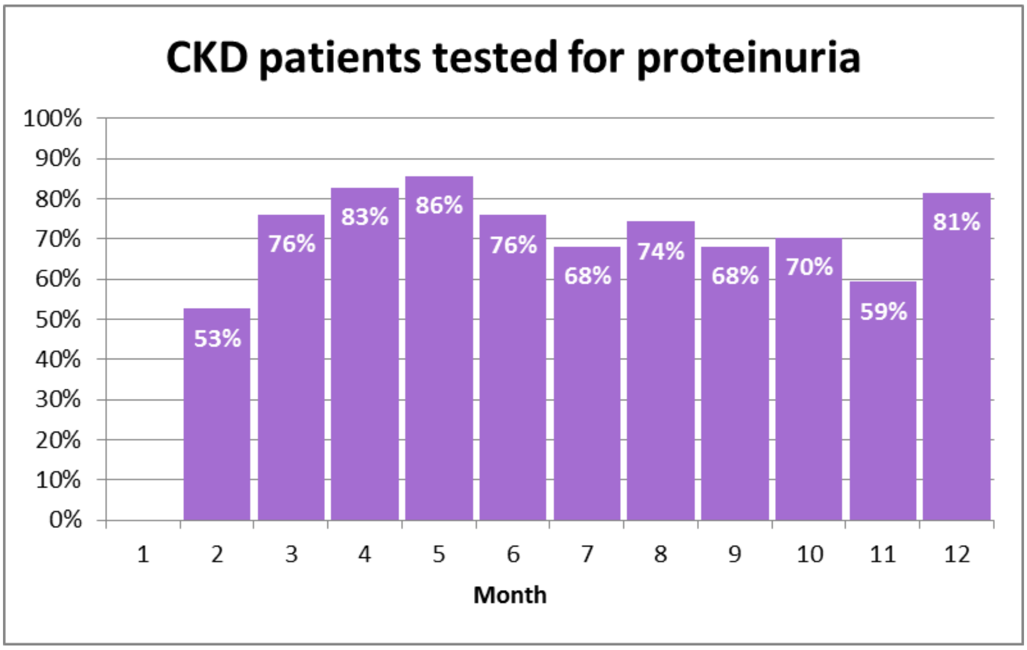


Figure 20: Change in percentage of CKD patients tested for proteinuria over the project

There were three major complications in the monthly collection of CKD data during this project, which results in the data in Figure 20 losing some integrity and reliability. These were:

1) The staggered start date of the project in different practices and absence of an opening Learning Session made the clear communication of the purpose and frequency of monthly data collection request more difficult, resulting in less reliable submissions from practices.

2) The three Synergy practices all migrated practice system in May/June 2013 resulting in some reported data loss for these practices, and causing their associated achievement figures to drop.
3) For QOF 2013/14, the CKD indicator timeframes for recording a test for proteinuria and achieving blood pressure control were reduced from 15 to 12 months. This caused the numbers tested in Figure 20 to drop significantly after month 6, until the data was collected using a manual count in at the end of month 12. CLAHRC GM encouraged practices to adhere to the new testing timeframes, but continued to measure these outcomes using a 15 month window for consistency.

At the close of the phase 1,766 (81%) of the 2,167 patients had a test for proteinuria recorded within the last 15 months. Ideally we would look to map an improvement against the baseline figure. The data that we have recorded from practices at baseline is not accurate enough to plot this figure at baseline (either because figures had not been submitted to use or practices didn’t all sign-up to the project at the same time). As an indicator of the true baseline figure, we have recorded the outcome figure from the QOF 2011/12 CKD6 (now CKD4) indicator for these practices as a comparator. Cumulatively, this figure was 1,479 (79%) of 1,872 patients with controlled blood pressure. In our baseline data for the project 1,871 CKD patients were recorded. Therefore, this does serve as a reasonable comparator. We can therefore presume that the number of patients tested for proteinuria during the project rose in proportion with newly recorded CKD patients.

The problems listed above in relation to receiving accurate monthly data from practices had similar implications for the blood pressure measures for the project. The clinical system, Synergy, proved to be too difficult for practice staff to construct the necessary searches to obtain the requested blood pressure data, and this was a system that the CLAHRC GM team did not have experience with in order to assist practices with searches. Therefore, it became impossible for us to collect accurate baseline, and on-going monthly data relating to this measure using the metrics we would have ideally liked to apply. Figures 21 and 22 are records of how many patients met the measure at project close collected from the manual data count. For Figure 23, to measure change against baseline we have used the QOF 2011/12 CKD3 numerator (now CKD2) figure for each practice as a baseline number, and our team collecting this figure from practices monthly (either from data requests at the end of month or during practice visits by facilitators).

Patients recorded with CKD & proteinuria	159
CKD patients with proteinuria treated to target	76
% of CKD patients with proteinuria treated to target	**48%**
Patients recorded with CKD and without proteinuria	1638
CKD patients without proteinuria treated to target	1458
% of CKD patients without proteinuria treated to target	**89%**
CKD register with and without proteinuria treated to target	1797
% overall CKD register treated to target* *% takes into account those patients recorded as CKD but not tested for proteinuria	**71%**

Table 5: Number of patients achieving blood pressure objectives for the project

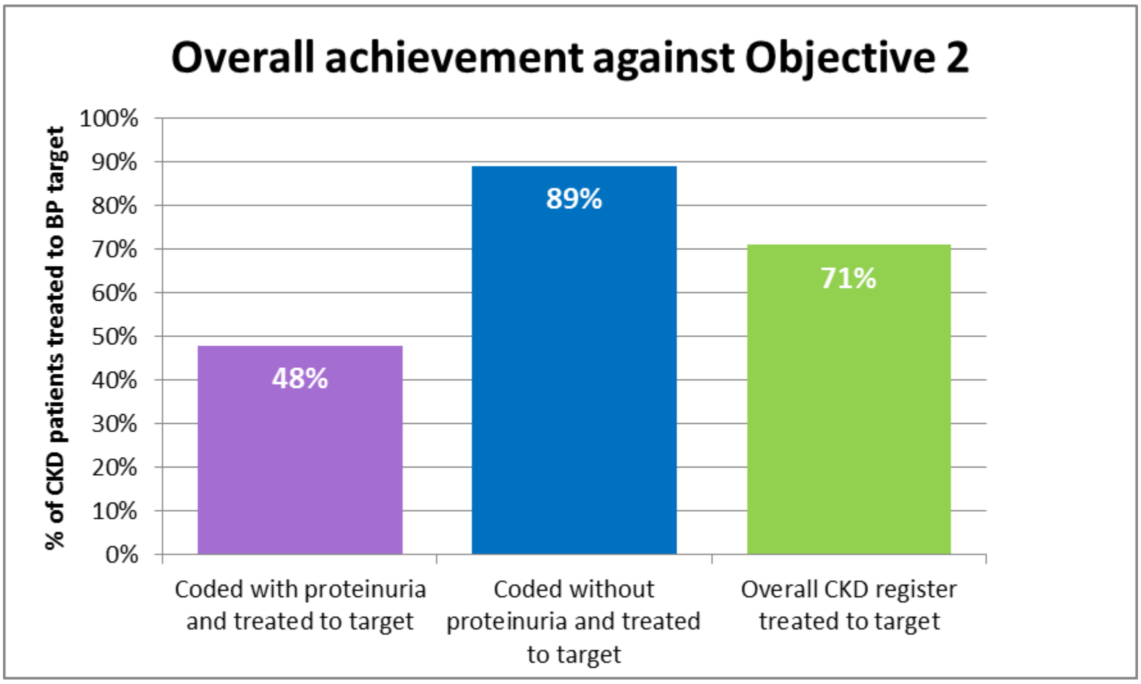


Figure 21: Percentage of patients meeting blood pressure objective

In these practices 1,534 (71%) of the 2,167 recorded CKD patients had been tested for proteinuria and had their most recent blood pressure reading recorded within NICE recommended targets inside the last 15 months. The pattern of blood pressure control is in keeping with the two previous projects, where a large difference in outcomes was observed for patients with and without significant levels of proteinuria. Of those CKD patients with proteinuria, only 76 (48%) were controlled to <130/80 mmHg, whilst 1,638 (89%) of those without proteinuria achieved a blood pressure of <140/90 mmHg. Overall, practices failed to meet the 75% (1,625 patients) figure required to meet this objective. This could be explained in part by the tighter timeframes that were applied to the figures that calculate this measure in this phase.

However, there was also a wider variation in practice achievement for Objective 2 (Figure 22) when compared with the previous phase. The outcomes at practice level range from 55% (Dr. Lewis, Grasmere Surgery) to 84% (The Grange). Collectively, the outcome figure at Grasmere Surgery was 61% for this objective. As Grasmere and Hindley are both large practices, and the lowest scoring practices in this respect, this could indicate that there is an important lesson for these practices in respect of allocating enough practice staff and protected time to complete large pieces of work.

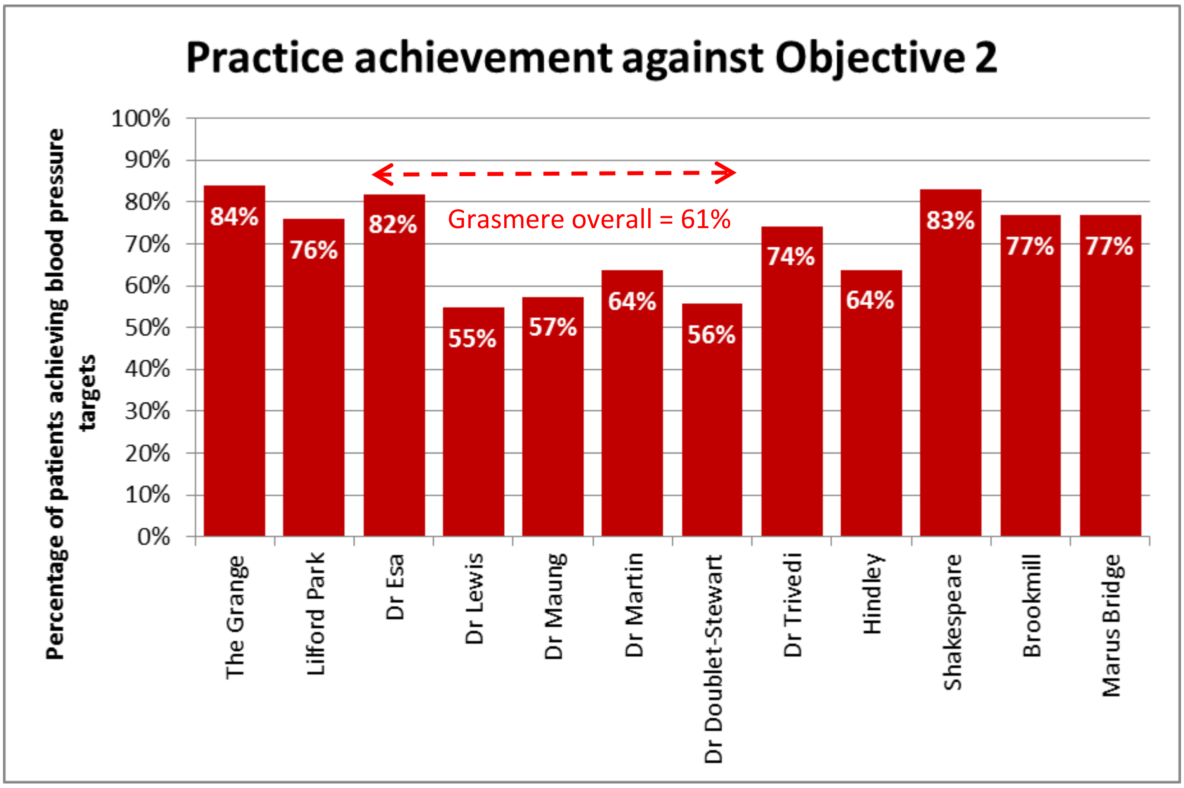


Figure 22: Manually counted outcomes per practice for Objective 2 (75% target)

Again, as no baseline data could be recorded to accurately produce a run chart measuring practice progress against Objective 2 throughout the project, we have used the QOF data collected monthly from practices to produce the graph below as an indicator of practice progress (Figure 23).

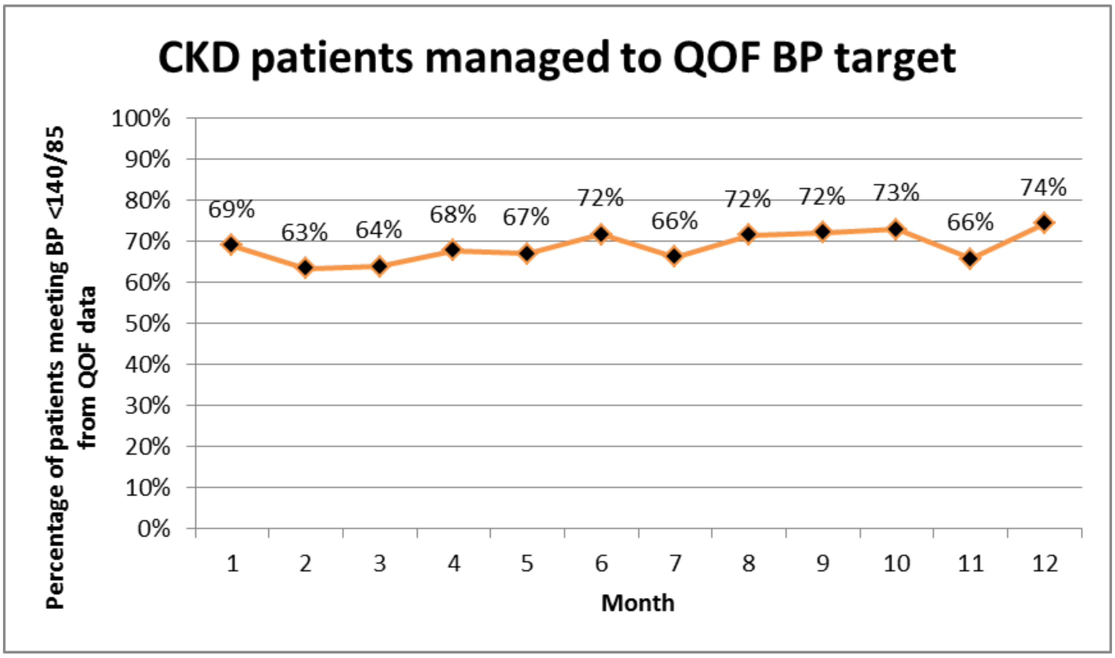


Figure 23: Monthly progress in practices managing BP to QOF CKD indicator

Figure 23 shows how achievement rate against the QOF measure is much more consistent than the project measure for blood pressure control, and indeed more consistently managed than testing CKD patients for proteinuria. The latter point is perhaps indicative that it is more routine for patients to have their blood pressure checked during a consultation than to be given a test for proteinuria – as the timeframe for recording either is the same in QOF. This is what we would expect to see, given that blood pressure is likely to be measured and recorded for a wider number of reasons.

1.6. Phase comparisons

Objective 1

Each phase of the CKD project in NHS Wigan CCG has been of 12 months duration. In all three phases, practices have easily surpassed the overall project objective of halving the prevalence gap in the 27 implementation sites.

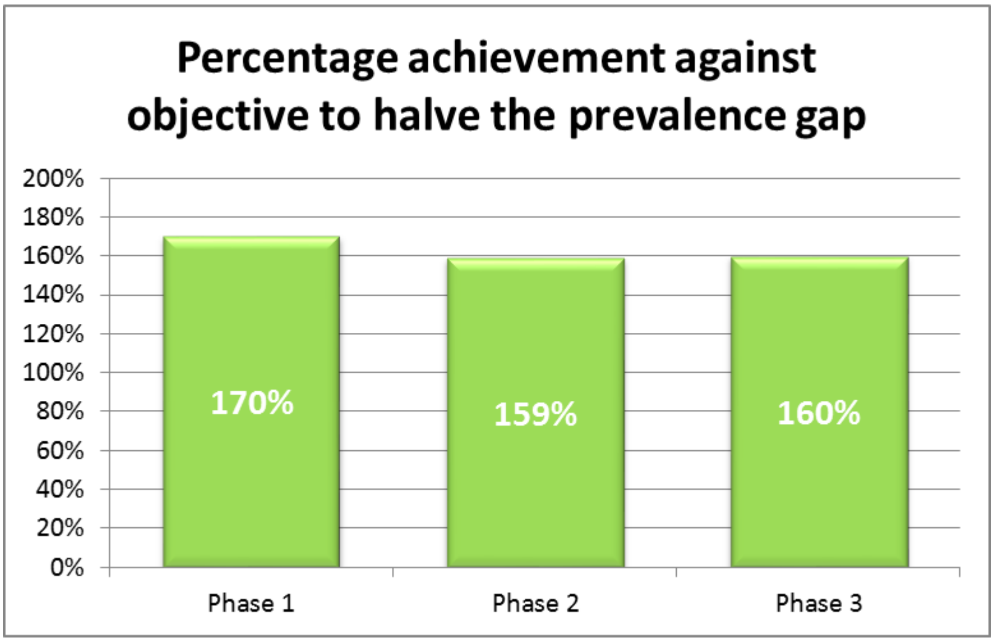


Figure 24: Achievement in halving the prevalence gap by phase

Achievement outcome in halving the prevalence gap has been fairly consistent across the three phases of implementation with a range of only 11% (Figure 24).

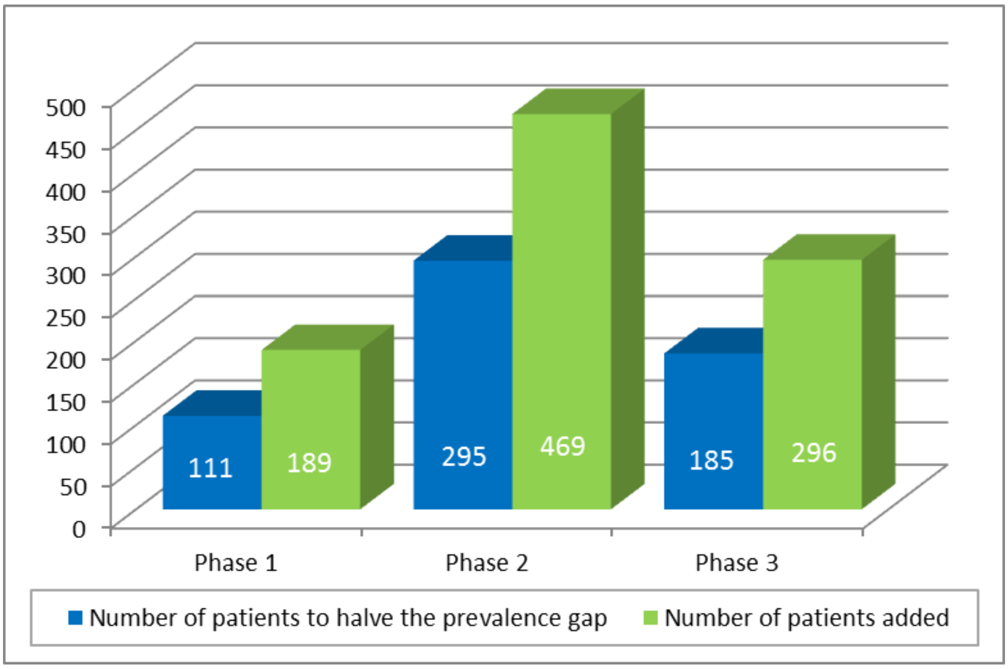


Figure 25: Number of patients required to add to the register to halve the prevalence gap vs. number of patients found in each project phase

However, as Figure 25 shows, there were significant differences in the actual number of patients added to CKD registers in each of the three projects. Phase 1 numbers were considerably smaller than the two subsequent phases in part because there were fewer practices involved from NHS Wigan CCG. Table 6 provides a breakdown of how many practices from NHS Wigan CCG were involved in each project phase and the number of patients 18 years or older that they had registered at project baseline.

	Adult population in phase	Number of Wigan practices involved	Average practice list size
Phase 1	18,741	5	3,748
Phase 2	40,626	10	4,063
Phase 3	36,297	12 (8)*	3,025 (4,537)*

*Phase 3 has been calculated as both eight and 12 practices to account for the five separate GP practice codes at Grasmere Surgery.

Table 6: Population and number of practices that each project phase covered

Another crucial factor in explaining differences in the number of additional patients required to halve the prevalence gap in each phase of work was the baseline prevalence for each phase. Each had a higher baseline prevalence than the phase that preceded it (Figure 26).

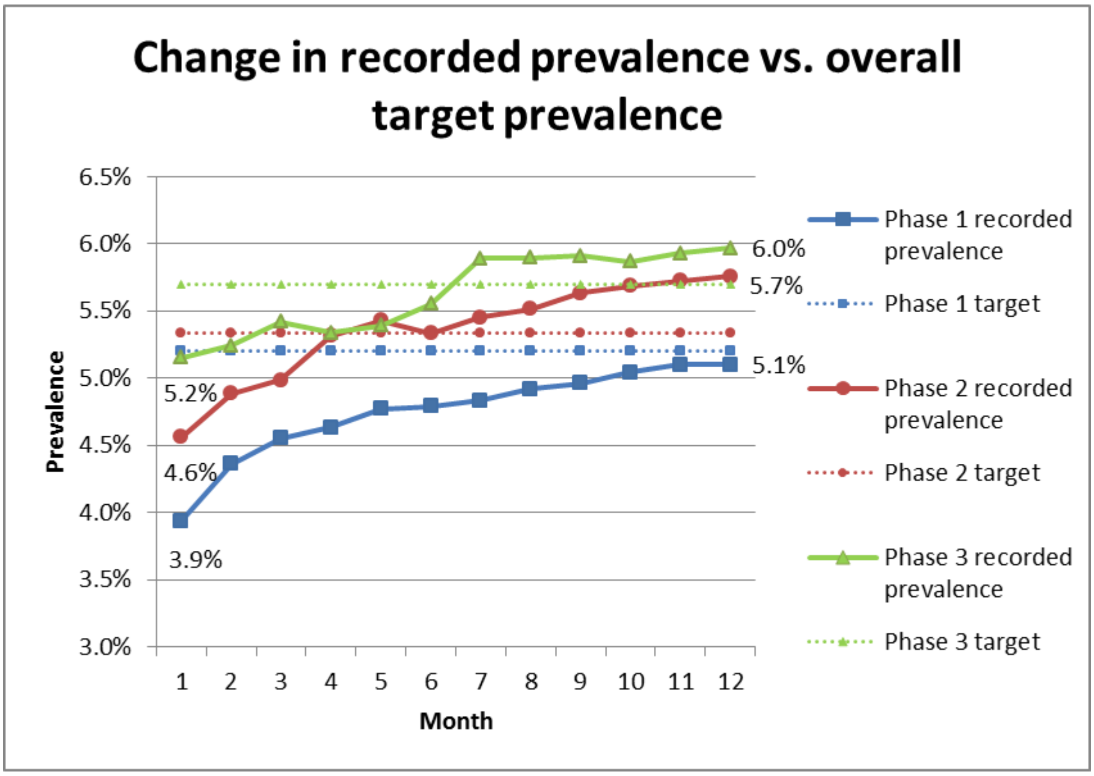


Figure 26: Change in recorded prevalence during each project phase vs. overall prevalence target for phase

Objective 2

In order for patients to be assessed as having met the blood pressure objective in each project, our measure has first required them to be tested for proteinuria to define what blood pressure target they should be controlled to as per the NICE CKD guidelines. Testing for proteinuria was a new QOF CKD indicator in the year that Phase 1 took place. Figures 27 and 28 both demonstrate increases in the number of tests for proteinuria given to CKD patients over the course of the projects – and that testing CKD patients for proteinuria has become much more routine since its initiation as a QOF measure in 2009/10. It is worth noting that for Phase 3, a time limit of 15 months was implemented when recording how many patients had received a test for proteinuria, which accounts for some of the drop in achievement against this measure.

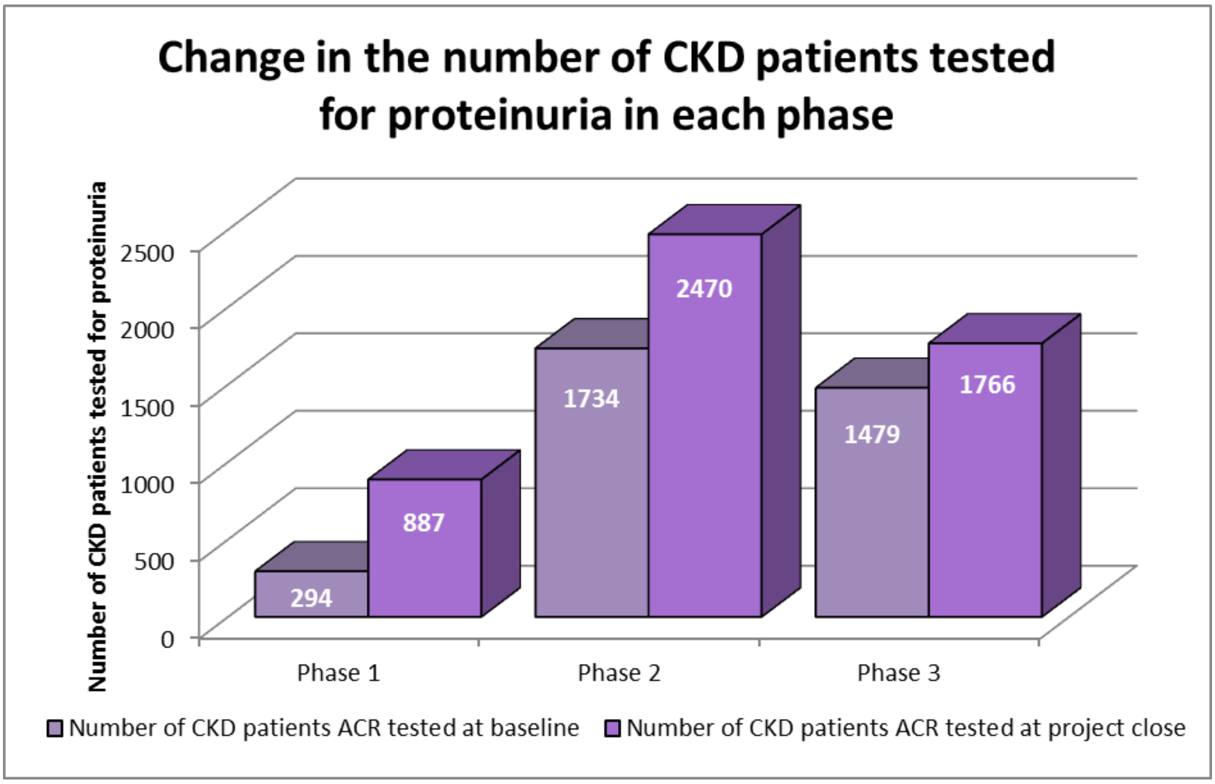


Figure 27: Change in the number of CKD patients tested for proteinuria in each project phase

In Table 7 there is a breakdown of how many additional patients were tested for proteinuria per phase according to the recorded figures. Of course, we cannot assume that all new patients added to the CKD register did not have a pre-existing test for proteinuria that accounts for some of the increase, but these figures are a good indication of the progress that teams made towards implementing improved care for CKD patients.

Project phase	Additional number of CKD patients tested for proteinuria
Phase 1	593
Phase 2	736
Phase 3	287

Table 7: Additional number of CKD patients tested for proteinuria by project phase

Figure 28 shows the change in percentage of patients that had been tested for proteinuria at phase baseline and close. Although Table 7 tells us that the greatest number of additional patient tests was recorded in Phase 2, the greatest increase in percentage was in Phase 1. This is to be expected as this was the same year that the indicator was entered onto the QOF measures.

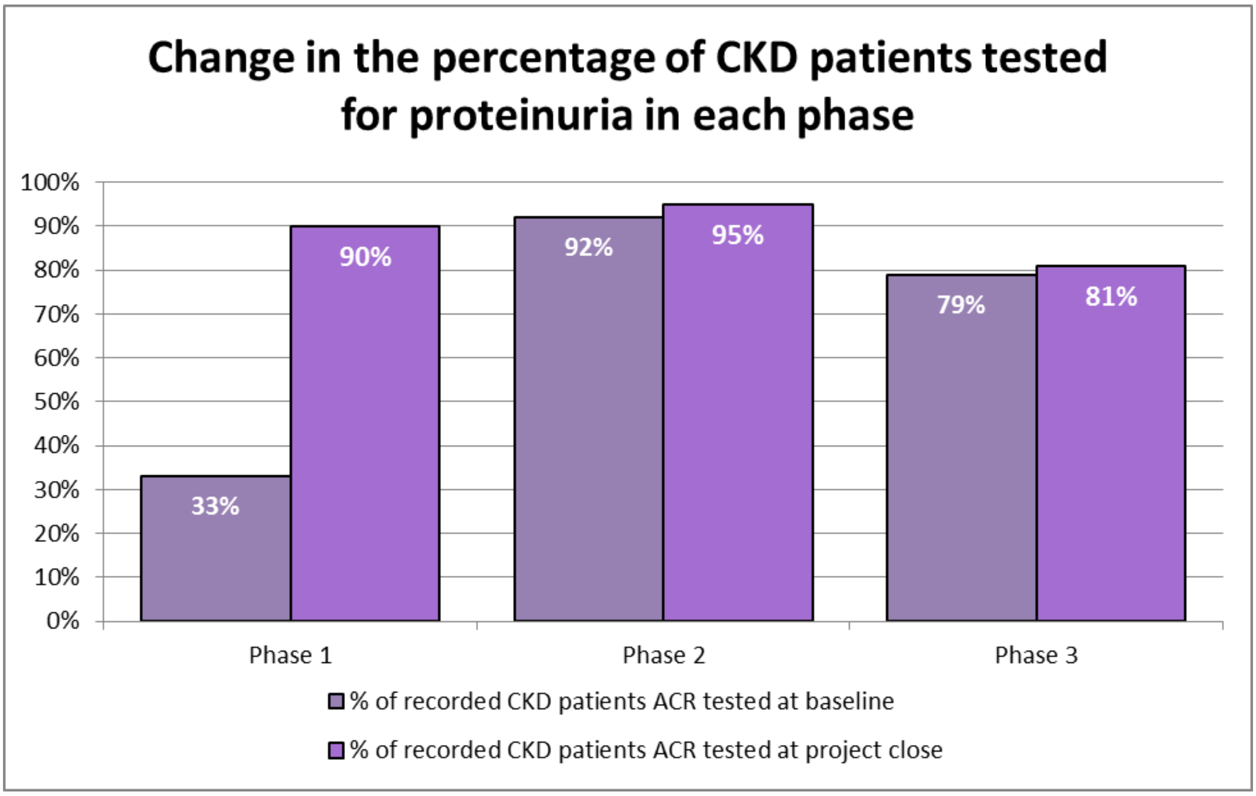


Figure 28: Change in the percentage of CKD patients tested for proteinuria in each phase

The second objective proved more difficult for the practices to achieve overall. In two out of the three phases, this objective was not met. In Figure 29, the outcomes for each phase are given (1) for CKD patients with proteinuria, (2) for CKD patients without proteinuria, and (3) the overall CKD register.

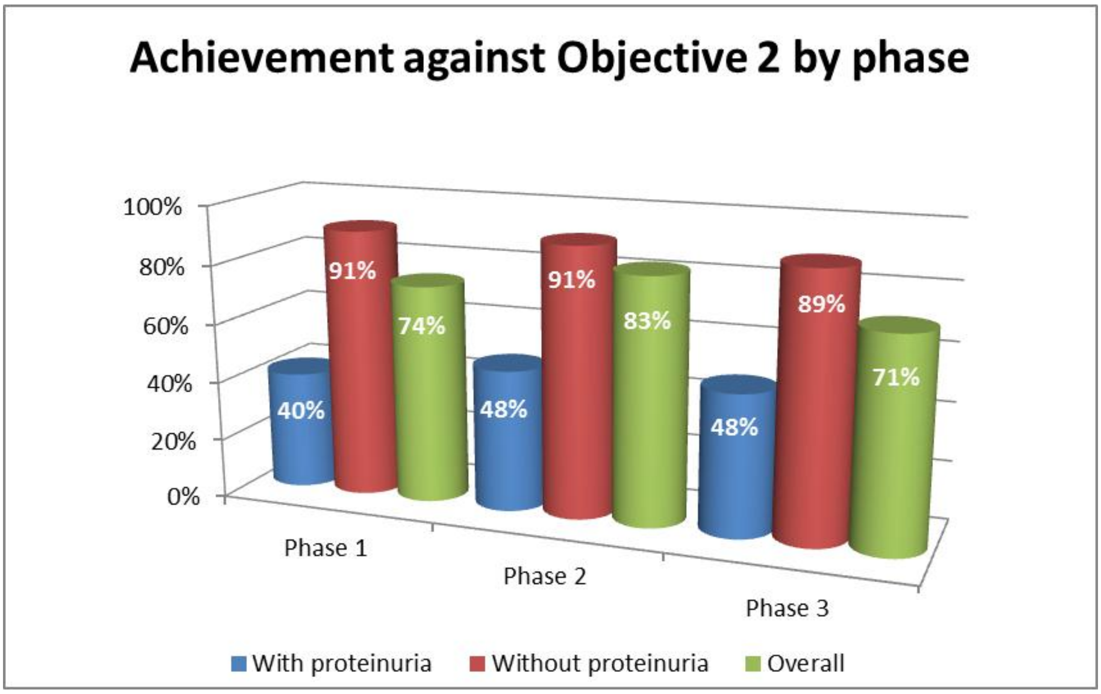


Figure 29: Overall achievement by phase against Objective 2

What is evident from this figure is that despite intervention and education around this aspect of CKD management, care for patients with CKD and proteinuria has not improved as hoped. In phases 1 and 3, part of the reason that Objective 2 was not achieved was that practices did not meet the first project objective of halving the prevalence gap as early in the phase timeline, reducing the proportion of project time that they could dedicate to this objective. As has been covered earlier in this report, also crucial was the limited timeframe that was applied to this measure in the latter project. The concurrent changes in the structure of primary care may have also had some implications in the time that clinicians had available to dedicate to the project. This factor may be explored at a later date from a qualitative viewpoint.

It is difficult to account for why CKD patients with proteinuria are less well managed than those without proteinuria, and it is likely that this is down to a multitude of factors. Possible reasons may include the following:

- The recommended blood pressure is lower for patients with proteinuria and is harder to achieve
- Concerns at lowering the blood pressure by too much in older patients (e.g. falls)
- Lack of understanding of the evidence for achieving lower blood pressure target
- Practice staff that we have worked with on the implementation project may not be in a position to enforce the use of this target within their practice
- Hitting this target is not payment incentivised in any way. Although testing for proteinuria is a QOF CKD indicator, the target for controlling blood pressure is the same whatever the result. Therefore, there is no financial benefit to the practice of lowering blood pressure further in these patients.

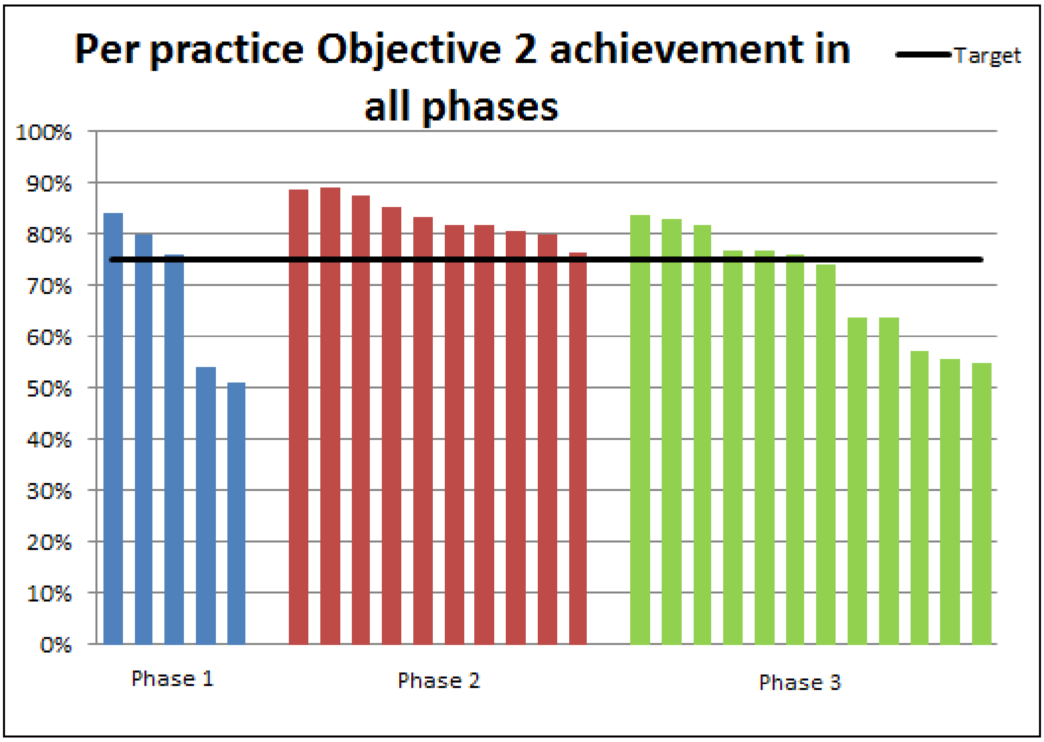


Figure 30: Achievement against Objective 2 of all practices in all phases of work

There have been varying levels of consistency for practices in achievement against the second objective of the CKD project. There are also caveats in each phase that should be applied to the outcome data when making evaluations as they could be considered either advantageous or disadvantageous to in direct comparison with one another.

Phase 1

Outcome: Three out of the five NHS Wigan CCG practices surpassed the 75% target.
Caveats: There was no time limit on the most recent test for proteinuria, or the latest blood pressure reading in the close of project data request to the practices. All data collections (ongoing and project close) in this project were completed by practice staff and not by CLAHRC GM staff. Therefore, there is a strong likelihood that collection methods and parameters were not consistent across all practices. The CLAHRC GM team had no safeguard to verify if data was accurate or not, other than applying common sense where achievement was above 100% for Objective 2, as it is not possible to score above that for this measure.

Phase 2
Outcome: All ten practices met this objective. The results against this objective for this phase of the work were encouraging as it suggests that a standardised level of care had been implemented for these practices.
Caveats: In this project monthly data was submitted by practices, but all of the outcome data at project close was collected manually by the CLAHRC GM implementation team. As with the previous project, timeframes for testing for proteinuria and blood pressure control were not applied.

Phase 3
Outcome: Six out of the 12 (or five out of the eight if Grasmere Surgery is considered as one practice) met this objective.
Caveats: In this project monthly data was collected by a mixture of submission by practices and from collections by project facilitators during practice visits where electronic requests for data were not completed. This project was the first time that timeframes were applied to the measures in Objective 2 (15 months). This may account for some of the overall reduction in achievements for this objective. However, the wide variation of outcomes in relation to this measure are indicative that some practices did not manage to move beyond stages of register validation and identification of patients in order to make an impact with this objective of the work. This may be down to time constraints or inability to commit enough resources to the project at particular practices; GPs, in particular, struggled to commit time to the project in light of greater commissioning duties. Also possible is that the project wasn't a high enough priority for some practices in competition with other work at the time.

Outline of the situation in NHS Wigan CCG in 2013

Having completed the intervention project in 27 of the 65 primary care practices in NHS Wigan Borough CCG, there has been a considerable change in the recorded levels of CKD in that time. Figures taken from the QOF results for 2012/13 and applied to the same model that was used in Figure 1 show that if a 6% estimated prevalence is assumed for the local population then there are very few patients now 'missing' from practice CKD registers (Figure 31).

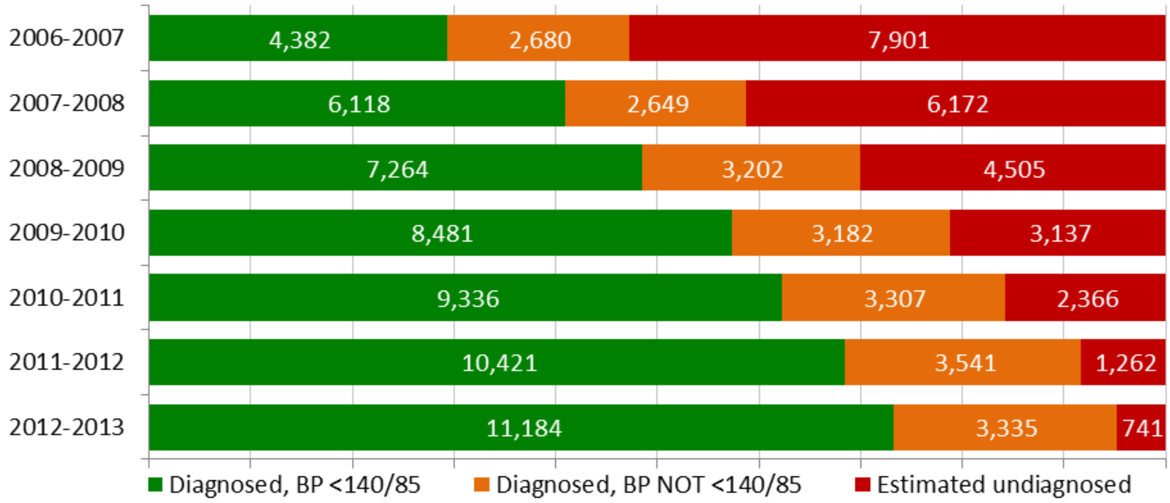


Figure 31: Estimated gaps in diagnosis and care for CKD patients in 2013

There has been an increase in 2,703 detected cases of CKD since the year that CLAHRC GM initiated Phase 1 in NHS ALW. 954 of these patients have been diagnosed directly during the course of the three phases of project implementation in the 27 practices. The project was designed to build sustainable change in the capacity for practices to continue accurately identifying CKD patients – and the latest figures are indicative that this may have been an outcome.

In the same time frame, the proportion of CKD patients that are managed within QOF measured parameters for care has increased. In 2009/10, 73% of CKD patients met the CKD3 indicator, this has improved year-on-year to 77% in 2012/13.

2.0. Qualitative evaluation of Phase 2 of the project (summary of findings)

Evaluation aims and objectives

The aim of the qualitative evaluation was to gain insight into the mechanisms and processes responsible for the clinical outcomes observed in Phase 2 of the project in order to improve the effectiveness of future quality improvement initiatives.

The key aims were:

1. To describe the different activities performed and changes made to practice during the project and their perceived or known impact
2. To identify how deeply and broadly changes in clinical practice have been implemented
3. To identify the factors and conditions considered by participants to promote or inhibit success
4. To assess the wider outcomes/impacts of the project
5. To describe the experiences of those involved in the project.

Evaluation methods and process

Purposeful sampling was used to select improvement teams who had been involved in the project for interview, to include a range of characteristics including: practice size, level of engagement with the central CLAHRC team over the course of the project, improvement team structure and relationships within the improvement team. Due to time and resource constraints, the sample size was limited to five practices, representing almost half of those involved in the project. Once practices had been selected, each member of the practices' improvement teams was invited to participate in an individual interview. A total of fourteen interviews were conducted by a single investigator. No individuals invited to take part in an interview declined to participate.

Interview questions were developed through discussion with the CLAHRC GM implementation team leading the project and were purposely selected to address each of the evaluation objectives. A copy of the interview topic guide is provided as Appendix C. All participants were additionally provided with an overview of the questions they would be asked during the interview prior to participation. Interviews were semi-structured and took place at the participants' place of work. Interviews lasted between six and thirty minutes and were audio recorded.

The data from the interviews was transcribed verbatim. Transcripts were then read identifying the main themes and subthemes relating to each of the evaluation objectives. Once the themes had been identified, each transcript was then read again to identify where themes were mentioned and then coded. Themes identified were checked for clarity by a second member of the team and, following discussion, amended as required. A brief synopsis of what each interviewee had said in relation to each theme was then entered onto a chart to enable key messages and patterns, both within and across themes, to be identified.

Confidentiality

Formal ethical approval was not required for the evaluation as it was classified as service evaluation under NHS governance procedures. However, ethical principles were adhered to throughout to ensure that the evaluation was conducted to high scientific and ethical standards.

Care was taken when designing the evaluation to ensure that all participants were given full information about the evaluation, were aware of their right to refuse or withdraw from the evaluation at any time and were fully aware of the confidentiality with which the data would be treated. Verbal informed consent was additionally obtained from all participants immediately prior to participation.

All participants were assured that data obtained would be treated in absolute confidence and were advised that no individual data would be divulged to any persons, external organisations or body outside the CLAHRC GM CKD team. Furthermore, all those who took part were informed that quotes extracted from the analysis of the qualitative data included in this report would not be directly attributable to the individual. All data was coded numerically in order to protect anonymity of individual responses.

Every effort was also made to anonymise groups or networks as appropriate, and always when the material was sensitive. Nevertheless, in some cases the identity might become apparent to an individual reader through his/her prior knowledge of the group/network. Therefore, where material was deemed sensitive upon analysis and it was thought that the individual could be identified from the information, the individual in question was contacted and asked to indicate whether they wished for it to be omitted from the final report.

All electronic interview data has been stored on a secure server at Salford Royal NHS Foundation Trust only accessible to members of the CLAHRC GM CKD team. This includes recordings of interviews and copies of meeting notes. Data stored on the server will be archived for ten years and paper notes and interview recordings held on the digital recorder will be destroyed once the final report has been completed and accepted.

2.1. Evaluation findings

Aim 1: To describe the different activities performed and changes made to practice during the project and their perceived or known impact.

Key Findings

- There was very little variation in the nature of the activities undertaken by each practice, although differences were noted in relation relative importance attributed to each activity by the individual practices and the amount of time spent on each.

- The results of the IMPAKT™ tool, for all practices, provided the foundation for the majority of activities undertaken.

- Several practices indicated that there was an 'ideal order' in which to complete the activities associated with the project in order to make the process as efficient as possible and to ensure sustainability of the results. For example, practices deemed it important to develop a practice protocol and provide practice education prior to, or at least at the same time as, validating the register, as this would ensure that clinicians did not continue to add patients inappropriately to the CKD register while the validation process was taking place.

- Practice-based education, both clinical and non-clinical, was considered, by many practices, as the most fundamental activity undertaken as part of the project. For this purpose, many practices were able to exploit existing structures for education provision within the practice. However, where such structures were not in place, running educational sessions proved considerably more problematic.

Aim 2: To identify how deeply and broadly changes in clinical practice have been implemented.

Key Findings

- The majority of practices ensured that, in the long term, all clinical staff in the practice took responsibility for appropriately diagnosing, coding and managing patients with CKD. In these practices it was felt that this was supported through the provision of practice-wide clinical education. This collective clinical responsibility was considered essential to ensuring that improvements made during the project were sustained in the longer term.

- In one practice, the practice nurse has assumed responsibility for diagnosing and coding patients with CKD independently of the GPs within the practice. This was considered, by the practice, as being the most effective means by which to maintain the quality of the CKD register.

- At the conclusion of the project, several practices had plans in place in relation to how they were going to maintain the quality of the CKD register. These primarily, but not exclusively, involved an allocated individual running routine pre-defined searches. Other practices, however, were yet to consider and address the issue of sustainability.

Aim 3: To identify the factors and conditions considered by participants to promote or inhibit success.

Key Findings

- Time constraints were cited by the majority of individuals as the most significant difficulty they encountered over the course of the project. In several practices, this was overcome, to some extent, by the provision of protected time.

- A significant number of practices found it difficult to contact patients and engage them in the process of providing blood and urine samples to enable them to confirm whether the patient had CKD and/or proteinuria. This task usually fell to the healthcare assistants.

- In the majority of practices, the improvement work was led by a designated multi-disciplinary 'improvement team', with tasks being allocated to individuals within the team according to their competencies, skills and role. Team members provided a source of motivation, encouragement and support for one another, with team working being considered a major essential component of the project. Some practices, however, indicated that they wished they had involved more members of staff from the outset, not only to make better use of the skill set within the practice, but also to provide more individuals with an opportunity for personal development.

- The facilitation support provided throughout the project was viewed, by all practices, as fundamental to their success in the project. Practices benefited from the formal and informal contacts they had with the CLAHRC GM facilitators and valued the support and materials provided. Opinion, however, was divided with regards to the utility of WebEx sessions used during the project.

- Practices found it beneficial to have the project broken down for them into 'bite size chunks' as this prevented them from feeling overwhelmed. Most practices were also happy for the activities they undertook and the way in which they undertook them to be guided by the facilitators, regarding the facilitators as 'experts' in how to go about the project in the most effective and efficient way.

Aim 4: To assess the wider outcomes/impacts of the project.

Key Findings

- Many improvement team members described how their skills, knowledge and confidence in relation to the management of CKD had developed considerably as a result of the project. Several also indicated that the project had also provided them with an opportunity to enhance their project management and computer skills. These skills and abilities were considered readily transferable to other clinical areas.

- In several practices, the use of multidisciplinary improvement teams in the project had been effective in breaking down professional boundaries, improving interprofessional communication and promoting the development of effective working relationships.

- The CKD project was cited as being successful in bringing practices together to work collaboratively and promote the sharing of good practice.

- For some, the project as considered to have brought financial benefits, both to the wider health economy and to individual practices, in the latter case through the identification of patients requiring booster doses of pneumococcal polysaccharide vaccine (PPV).

2.2 Recommendations

To maximise the effectiveness of future quality improvement work, the following is recommended:

1. Continue to promote the establishment of multidisciplinary teams in each practice to lead the improvement work. The membership of these teams should be flexible and participants should be encouraged to continually re-evaluate the composition of the team over the course of the project to ensure that they make best use of the skill mix within the practice.

2. Participating practices should be encouraged to complete the tasks outlined in the ‘ideal sequence’ outlined in Figure 4 in order to avoid duplication and maximise efficiency. In particular, from the outset, members of the improvement teams should be prompted to begin to identify a convenient date and time near the beginning of the project to hold an education session, delivered by members of the improvement team, for the clinical staff within the practice.

3. Improvement teams should be encouraged to promote a sense of ‘shared clinical ownership’ for the diagnosis and management of CKD across the practice. This can particularly be supported by the provision of education each practice, as outlined above, and is deemed essential to ensuring sustainability of the outcomes achieved in the project.

4. The presence of CLAHRC facilitators was considered, by many, to be central their success in the project. The provision of facilitation support should therefore be considered a key component of any future improvement work. In particular, where possible, nurse or clinical facilitators with the appropriate skill set and experience should be identified, in addition to non-clinical facilitators, as their knowledge and specialist support is considered highly valued, particularly by the nurse members of the improvement teams.

5. Where possible and appropriate, CLAHRC facilitators should aim to provide an element of education for all staff within each practice. This may be in relation to the project itself or clinical education, provided by a nurse facilitator, focused on the management and diagnosis of CKD (*or a combination of the two*). This ‘external education’ delivered within the practice, as opposed to that delivered ‘in-house’ by members of the improvement teams, can assist in legitimising the work that members of the improvement team are undertaking within the practice and help to assist them in gaining the support of their colleagues, both clinical and administrative/managerial.

   In addition, CLAHRC facilitators may also need to support improvement teams in providing ‘in house’ education, particularly if this is delivered early on in the project, as these individuals may be yet to develop the confidence and knowledge in relation to CKD required to comfortably deliver education to their peers and colleagues.

6. CLAHRC facilitators should continue to tailor the support their offer according to the needs of individual practices. For all practices, however, tasks to be completed during the project should be introduced in ‘bite-sized’ chunks as this is effective in preventing improvement teams from becoming overwhelmed by the scale of the task ahead of them.

7. Practices should be prompted to consider the sustainability of any changes or improvements they make from the outset of the project to ensure that improvements are maintained and are resilient to change in the long-term.

8. Face-to-face project-wide meetings, such as learning sessions, should continue to be incorporated into future projects. While other formats considered less time-consuming, such as WebEx sessions, were explored and utilised during the project to bring the practices together and share good practice, members of the improvement teams indicated that they still found the learning sessions highly valuable. These sessions not only offered an chance to learn more about the diagnosis and management of CKD and share good practice, but also provided an opportunity for them to meet the other practices involved in the project and develop a sense of a ‘project community’.

Appendix A – Pre-project Context Assessment

Understanding your practice

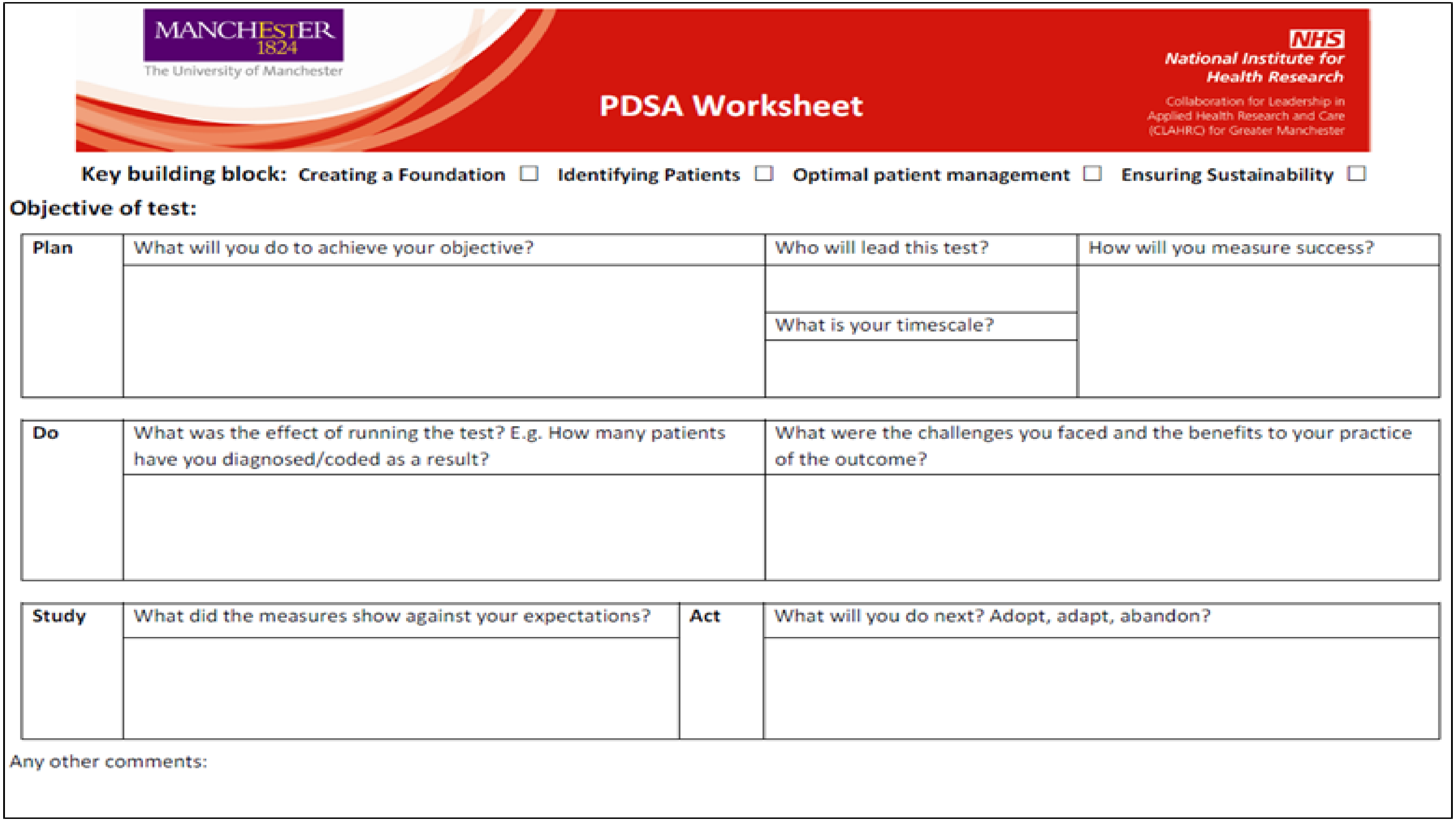
This questionnaire will help you and those working with you to understand what your practice is good at and where you could make improvements in the way you work. The questions will be reviewed anonymously so you can be honest about your experience as a member of staff.

Practice name:

Are you: Clinical ☐ Non-clinical ☐

	Strongly disagree	**Disagree**	**Neither agree/ disagree**	**Agree**	**Strongly agree**
What is it like to work in your practice?					
1. I have control over how I do my work	☐	☐	☐	☐	☐
2. I am supported to improve my skills and knowledge	☐	☐	☐	☐	☐
3. I receive recognition from others for my work	☐	☐	☐	☐	☐
4. We always try to involve patients in decisions about their care	☐	☐	☐	☐	☐
5. We are willing and encouraged to develop, share and try out new ideas that will improve care	☐	☐	☐	☐	☐
How does your practice monitor and improve the standard of care provided for patients?					
6. We have access to guidelines and protocols describing best practice care for patients	☐	☐	☐	☐	☐
7. We encourage patients to comment on their care and experience of the service we provide	☐	☐	☐	☐	☐
8. We routinely audit and review our performance and discuss where improvements might be necessary	☐	☐	☐	☐	☐
9. The staff get regular performance reviews	☐	☐	☐	☐	☐
How is the practice managed and organized?					
10. Everyone is encouraged to be involved in decisions that affect the practice	☐	☐	☐	☐	☐
11. We work well together as a team to solve any problems that may arise	☐	☐	☐	☐	☐
12. We have good working relationships with each other	☐	☐	☐	☐	☐
13. Every member of staff has clearly defined responsibilities	☐	☐	☐	☐	☐
14. Staff education is a priority for the practice	☐	☐	☐	☐	☐

Appendix B – Plan, Do, Study, Act template (Phase 2 version)



MANCHESTER
1824
The University of Manchester

PDSA Worksheet

NHS
National Institute for Health Research
Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Greater Manchester

Key building block: Creating a Foundation ☐ Identifying Patients ☐ Optimal patient management ☐ Ensuring Sustainability ☐

Objective of test:

Plan	What will you do to achieve your objective?	Who will lead this test?	How will you measure success?
		What is your timescale?	

Do	What was the effect of running the test? E.g. How many patients have you diagnosed/coded as a result?	What were the challenges you faced and the benefits to your practice of the outcome?

Study	What did the measures show against your expectations?	**Act**	What will you do next? Adopt, adapt, abandon?

Any other comments:

Appendix C: Interview Guide: CKD Improvement Project Qualitative Evaluation

Introduce myself; Purpose of the interview; What will be done with the information gathered; Permission to tape record the interview; Format and length of the interview; Any questions?

---

1. Can you talk me through the process that you have been through in your practice during the CKD project?

What have you done to identify patients with CKD who were not on the register?
What steps have you taken to improve the management of patients with CKD?
What changes have you made to your practice?
How did the idea come about?
How did you introduce these changes?
How successful do you think these changes have been?
What do you think has been the most/least successful change you've made?
How have you used the improvement methods in the project e.g. PDSA, audit?
How did you go about dividing the work up between the team? Did this go as planned?
How would you describe your role in the project?
Joining the project- who made the decision, what did they want to get out of it?

---

2. How widely have the changes you have made been implemented across your practice?

Who has benefited the most from the project?

What have you done to ensure that these changes will be sustained?

Future data collection- re-running the IMPAKT™ tool, re-verifying the register etc.

---

3. What do you think has helped you to make the changes you have during the project?

What do you think has hindered you? How have you overcome these problems?

Relationships in the practice (incl. clinical leadership)?
Relationships with the cluster/PCT?
Freedom to test new ideas?
Importance of CKD in the practice?
Practice organisation?
Support from the CLAHRC team (practice visits, learning sessions, WebEx sessions)?

---

4. Has the project had an effect on any other areas of the practice?

Is there anything you have learnt or done in the project that you think will be useful in other areas of the practice or future work?

---

5. How have you found the experience of being involved in the project?

Is there anything you have personally gained from the project?

If you were to start the project again, knowing what you know now, is there anything you would do differently?

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