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"GP Pharmacy Transformation project"

Community Pharmacist Independent Prescribers (CPIPs) working in patient facing roles in Primary Care

Independent Evaluation Report

University of Nottingham

Final Report October 2017

Project team

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Background

This project was originated from the work of the Clinical Leadership Advisor / Controlled Drugs Accountable Officer at NHS England In July 2014. A business case was proposed to prove the concept that pharmacists in general practice could provide a range of services and relieve some of the pressures on primary medical services. (Travis, July 2014) The work reported in this chapter focuses on this early scoping and proof of concept work.

This pilot is very timely. The primary care context has increasing demand (generated by a range of factors including political and austerity changes, an ageing population with increasing chronic illness and multimorbidity) and limited supply of general practice clinicians. The GP workforce 10 point plan (NHSE, 2015a) acknowledged that to address supply-demand imbalances GP practices would be encouraged to recruit pharmacists; the report laid out plans for a national pilot launching in 2015 with the first pharmacists working in General Practice on the pilot scheme by 2016 (NHSE, 2015b).

The pilot scheme was a 'proof of concept' scheme seeking to evaluate and understand the proposition '***Community pharmacist independent prescribers (CPIPs) can play a positive role in general practice and have a positive impact at all levels - on patients, practices and the NHS'***

A theory of change model was proposed to understand the implementation at multiple levels; the evaluation sought to understand the model on which the initiative was developed, the forms of evidence and experience which were influential and how a refined model of change can be used to inform future measurement and summative evaluation. The findings of the research are consolidated into the summary theory of change model presented at the end of this section. Take home messages are outlined.

Methods

The pilot scheme covered five CCGs in the East Midlands. Six general practices were recruited to the pilot scheme, matched to six pharmacists for a period of one year. Funding was provided to the employing community pharmacy as 'buy out' costs for the secondment. Pharmacists worked for a varying hours in each practice, between one and four days per week. Each site started at a differing point over 2015. Routine service data collected by programme managers shows that CPIPs undertook over 13,000 consultations. The evaluation was commissioned to review the pilot scheme and evaluate the proof of concept across all sites. The qualitative ethnographic evaluation work commissioned to be undertaken by the University of Nottingham outlined a series of key questions relating to the operationalisation and outcomes of the pilot scheme. The total data set from the one year evaluation utilised 75 independent sources of data collected from over 96 direct participants. Observational data was collected on at least ten separate occasions, covering at least 45 patient consultations. Interviews were conducted with 18 primary care staff and 33 patients through 5 patient focus groups. Data was subject to interdisciplinary thematic analysis using emergent categories as well as the consolidated framework for implementation research. The findings inform the development of a change model from theory to practice.

Findings

Implementation

The management roles were vital to allow neutral support to both parties, to manage the scheme, overcome barriers and achieve KPIs. Future schemes would benefit from similar levels of complimentary management – business and clinical.

There were high levels of success in implementation both where there were existing relationships, and where new relationships were developed. Recruitment was challenging due to limited supply of independent prescribing pharmacists in community pharmacy. As a result, one post was filled via a secondment of a hospital pharmacist. The scheme demonstrated that hospital pharmacist independent prescribers (IPs) as well as community based IPs can successfully transfer into patient facing primary care roles. Induction is vital to the success of the scheme. Typical induction periods covered 8 days whether this is 1 day per week or 4 days per week. Successful inductions included a period of clinical shadowing (with as wide a range of people as possible) and IT training. There is evidence that where no induction is provided this can create barriers to successful implementation. Mentoring is successful where scaffolding is provided from full support at induction withdrawing as confidence increases. Sites should be fully briefed of CPIP abilities and the front loaded investment time required in mentoring new posts to avoid mismatches in expectation.

Capacity

There is a wide range of ways that CPIPs can release capacity to the Primary Care team and contribute to managing demand. As soon as they are in post CPIPs can undertake medication reviews and respond to prescription queries which immediately releases GP capacity and thereby saving money for the practice. Through a scaffolded mentoring process CPIPs can begin chronic disease reviews in the early stages (within the first 6 months) of the role and be in a position to undertake them independently thereafter. This work releases further capacity and also generates income through the Quality and Outcomes (QOF) scheme. Practices can focus chronic disease work around local demand and respond to strategic needs. CPIPs who have been working for over six months, or who have experience of secondary care can support the primary care role in the discharge process. This work releases capacity, improves service and can have a significant impact on preventing readmissions therefore saving NHS spend in both primary and secondary care. The evidence collected clearly demonstrates the ways in which the work of the CPIP releases capacity for GPs and nurses. Improving capacity was a clear driver for the stakeholders in the scheme. **The evidence supports the concept that CPIPs can have a positive impact on the current supply-demand issues in general practice.**

Quality

CPIPs have demonstrated that they deliver holistic person-centred care, through longer appointment times and considering the patient and their range of conditions and medications as a holistic entity. By ensuring patients understand their medicines more, CPIPs can increase medication adherence which leads to more efficient and effective use of medicines which can have cost benefits. Finally the evidence has shown how CPIPs use motivational interviewing and monitoring to generate lifestyle changes in patients which could have long term impact for their wellbeing and reduce the longer term cost burden to the NHS. **The evidence demonstrates the ways that CPIPs can offer a quality service to patients.**

Uniquity

This section has given examples of uniquity – the way that the expert knowledge skills and experience of the CPIP adds value to their role. Patients report increased satisfaction through management of medication reactions and interactions to minimise side effects. CPIPs can serve as an important safety barrier in primary care identifying and preventing adverse effects often from sub optimal medicines optimisation made by others. All stakeholders in the practice environment learn from, and benefit from, the unique medication knowledge held by the CPIP. The CPIP uses their unique knowledge to remove unnecessary medicines from repeat prescriptions which represent cost savings to the NHS. The CPIP can act as a conduit for information and prescribing practise from national guidelines and supported by local teams to practise cost effective prescribing. **The evidence supports the concept that CPIPs have unique skills which add value in a unique wide range of ways to benefit patients, practice staff and the NHS at a broad economic level.**

Take Home Messages

Implementation

- Successful partnerships can be made between GPs and Pharmacists with no existing relationships
- Where existing relationships exist between a practice and CPIP the work can develop faster than where no relationship exists
- Recruitment – there may not be the ready supply of IP anticipated and further upskilling of Pharmacists to IP status may be beneficial to the overall development of the sector
- An induction period delivered locally is essential to building relationships, trust and development of the role
- An 8 day induction period (prior to patient facing work) provides a good quality introduction to the new work context, creates a sense of belonging and trust and forms a solid base for mentoring and role development
- An induction to general practice should include (as a minimum) the opportunity to shadow a range of staff, learn and practise working with the IT system(s), and build mentoring relationships
- Mentoring is a significant initial time investment for GPs with benefits realised later on during the first year
- Successful mentoring utilises a reducing scaffold model, often as per registrar training

Capacity

- Medication reviews were conducted by CPIPs from day 1 releasing capacity from GPs
- CPIPs visits to care homes and domiciliary environments represent a significant release of practice capacity
- Prescription queries, both from patients and other staff, quickly become the responsibility of the CPIP improving capacity for other staff
- Chronic disease management can be delivered by CPIPs including medication reviews and adherence and condition monitoring
- CPIPs can be actively directed to follow the strategic direction of local practice needs in terms of condition management and prescribing
- CPIPs positively contribute to discharge management and provide a strong link between primary and secondary care and the domiciliary or care home environment(s)
- CPIPs can manage acute care consultations and provide a useful back up to others offering these appointments, especially as demand fluctuates
- Patients recognise the benefits on primary care capacity and are happy to have ease of access to a clinician

Quality

- CPIPs were able to personalise appointment lengths according to the needs of the patients; on the whole CPIP appointments were twice as long as GP appointments or greater
- CPIPs provide holistic care by considering the person as a whole system of conditions, medicines and personal circumstances
- CPIPs provide invaluable medicines education and usage advice to patients
- CPIPs medication advice to patients leads to increased medication adherence which has potential for positive health and cost saving benefits
- CPIPs use skills in motivational interviewing to give advice about and monitor lifestyle changes which can have positive health an cost saving benefits
- Patients are very satisfied with the expert medication knowledge and skills of the CPIP which has been proven to rectify problems others have not been able to
- CPIPs can have positive impact on patient safety through their unique knowledge of medications
- CPIPS work on medication understanding, adherence and safety can prevent patients' readmission to secondary care which can save money for the NHS

Uniquity

- CPIPs bring unique expert knowledge to the primary care skills mix
- Patients benefit from holistic care which can lead to increased patient satisfaction
- CPIPs actively deprescribe and practise cost effective prescribing which has cost saving benefits for the NHS
- CPIPs can act as a strategic tool to drive NHS or local health aims and objectives
- CPIPs are able to conduct reviews and make interventions based on their expertise in medicines which may prevent hospital admissions
- Patients recognise the unique benefits of the CPIP role and act as ambassadors of the role

This report supports the concept that '**CPIPs can play a positive role in general practice and have a positive impact at all levels - on patients, practices and the NHS'**

Theory of Change Model

The following theory of change model summarises the key learning from the data collected in this evaluation.

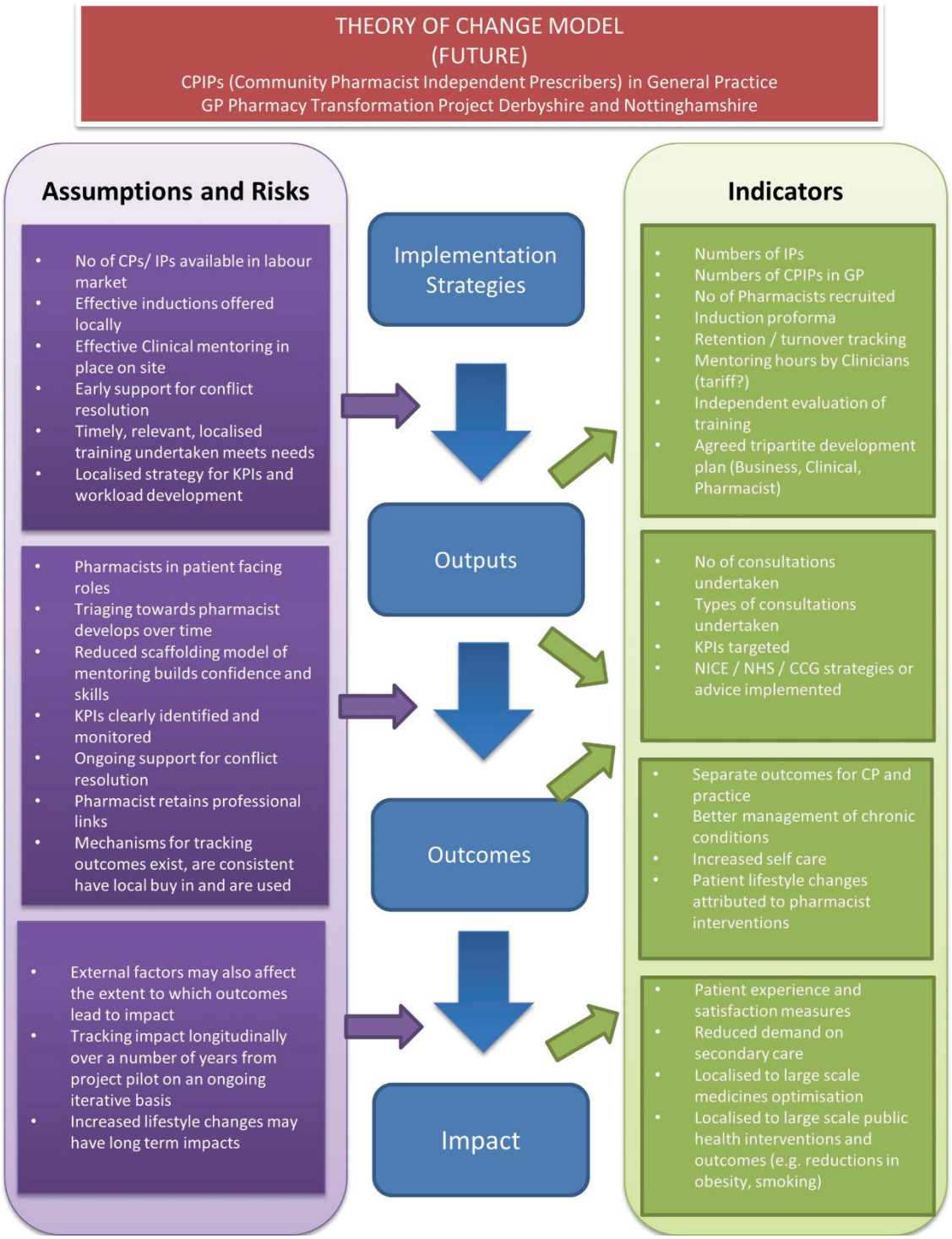


Figure 1 Theory of change model observed from Community Pharmacist Independent Prescribers' (CPIPs) working in patient facing roles in Primary Care evaluation

Background

UK Primary Care Context

The General Practice Forward View (GPFV) (NHSE, 2014) recognises some of the key issues in efficiently and effectively managing the frontline demand and supply of healthcare in the UK . The rise in long term conditions and the ageing population has impact on an increasing demand for Primary Care. GP consultations increased between 1996 and 2008 by an estimated 11%, and nurse consultations by 150% (GMC, 2016). At the same time spending on the NHS, and in particular in General Practice in Great Britain has declined. Furthermore there are significant reductions in the numbers entering general practice as a career, and a high rate of turnover of those working in the profession. (Baird et al 2016)

In 2013 the Royal Pharmaceutical Society 'Now or Never' report (Smith, Picton, & Dayan, 2013) suggested a significant rethink of the models of care through which pharmacy is delivered, away from dispensing and supply, towards using the professional expertise of pharmacists. The Royal College of General Practitioners (RCGP) agrees and suggests that primary care requires a more diverse skill mix and community pharmacy is a 'significant unexploited potential'. (Gerada & Riley, 2012)

This project was originated from the work of the Clinical Leadership Advisor / Controlled Drugs Accountable Officer at NHS England In July 2014. A business case was proposed to prove the concept that pharmacists situated in a general practice could provide a range of services and relieve some of the pressures on primary medical services. (Travis, July 2014)

The work reported here focuses on this early scoping and proof of concept work.

This pilot was very timely. The GP workforce 10 point plan (NHSE, 2015a) acknowledged that GP practices were recruiting pharmacists and laid out plans for a national pilot launching in 2015 with the first pharmacists working in General Practice on the pilot scheme by 2016 (NHSE, 2015b). This scheme is currently underway and evaluation taking place. The GPFV action plan (NHSE, 2017) confirms that this is seen as a long term solution and sets out that by 2020 there will be 10,000 more medical professionals working in general practice with a real term budget rises of up to 15%.

Within this piece of work one GP participant summarised this

> *'The problem we have got is, for example, when I first came here we had 5000 patients, over the last 4 years we have now got 10,000 patients. The amount of doctors has stayed exactly the same so the number of sessions we have to fulfil that has stayed the same. We have done sit and wait so the number of people I see has massively increased but the funding, because they have bought in this thing called Fairer Funding which is a euphemism for cuts, means that actually our income has stayed the same. We have managed to hire a little bit more admin staff and an additional nurse and she is coming soon. But apart from that my take home pay will keep on reducing as it has done for the last 7 or 8 years. So doctors surgeries partners will only look at this if they have a vacancy I suspect, and they can't fill a doctor's slot.* ***If we had a doctor who went and we just couldn't get a doctor for love nor money, then actually we would probably really do this because he is a prescriber*** *and we would probably push a lot more minor illness and he would probably get lots of letters and we would want to see him consulting*

a lot more. We had a vacancy recently and we offered partnership and we had one applicant! Lots of areas are having no applicants.' *(5016 GP5 Interview)*

Scheme Outline

A business plan was written and funding approved by NHS England for a pilot of the new clinical pharmacy role over 18 months across one area of the UK. Two project managers were recruited to manage the scheme – one as a business manager and another as a clinical manager.

As a 'proof of concept' study the work had a range of key aims including piloting:

1. the role in a range of scenarios – in different sized practices, in different areas, with a range of part-time posts
2. a part-time role where pharmacists remain connected to the community pharmacy context
3. a range of patient facing activities determined by practice needs
4. the role as an independent prescriber

The pilot spanned one geographic region and five CCGs of variable size. Six general practices were recruited to the scheme, matched to six pharmacists for a period of one year. Funding was provided to the employing community pharmacy as 'buy out' costs for the 12 month secondment. Pharmacists worked for a varying range of hours in each practice, between one day and four days per week. Each site started at a differing point over 2015. Generally practices and pharmacists were recruited independently and matched by the NHS commissioners, although one site and pharmacist were recruited who had an existing relationship and submitted a joint application. One pharmacist was recruited on secondment from secondary care. This differing range of scenarios allowed a unique experience to observe a health services implementation with some minor differences but one key and parallel aim – to prove the concept that prescribing pharmacists can become integrated and play a major role in supporting patients in primary care. Below shows a summary table of the sites at the commencement of their pilot.

Site	Size	Sites	No. of GPs	Start date CPIP	Days per week worked	Prescribing status
1000	Small	1	1	Sept 2015 / Oct 2015	1 day / 2 days	IP
2000	Medium	2	9	October 2015	2 days	Supplementary Not prescribing 6m
3000	Large	2	10	October 2015	3 days	IP
4000	Large	3	10	July 2015 / Oct 2015	2 / 4 days	IP
5000	Medium	1	7	Nov 2015 / Feb 2015 / April 2016	1 / 2 / 3 days	IP
6000	Large	4	16	April 2016	3 days	IP

Figure 2 Summary table of CPIPs and sites logistics.

One of the sites withdrew, therefore 5 sites completed the proof of concept pilot scheme.[1] Every other site completed a minimum 12 months.

One of the measures of the success of the scheme may be in the depth of concept proved. Of the five pharmacists who participated in the pilot scheme, 4 of them (80%) remain employed in the practice funded directly by the practice. This in itself is valuable outcomes data that evidences the concept worked and created added value for the pilot sites.

Audit work undertaken by the scheme commissioners demonstrates the types of work undertaken. These are outlined at figure 2. Over half of the work undertaken by the new CPIPs was in medication reviews, a third related to reviewing long term conditions[2] and their management and almost 10% of time was spent supporting general demand with urgent care appointments[3].

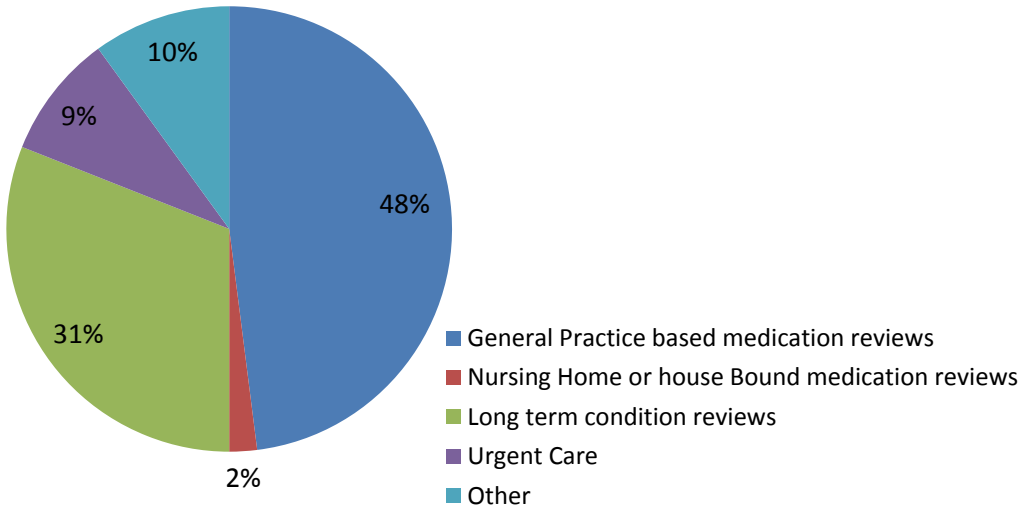


Figure 3 Types of appointments undertaken by Clinical Pharmacists in pilot proof of concept scheme (Reproduced from commissioner data)

The observation data collected demonstrates that the average appointment by a CPIP was significantly **longer** than those by a GP or Nurse. First round observations showed wide ranging average appointment times from 15-75 minutes, this had reduced slightly by second round observations to 10-40 minutes.

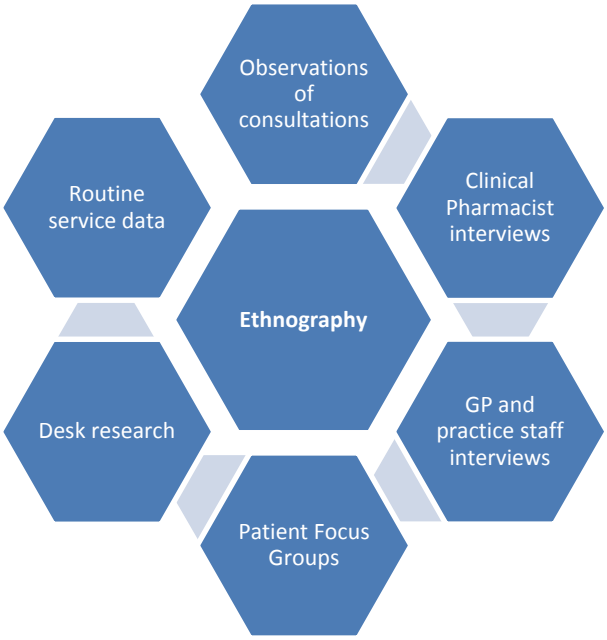
The cost per consultation has been calculated by commissioners (by adding the Community Pharmacist costs with GP supervision costs and dividing that by the activity) ranging from £18.00 to £38.00. Early results indicate that the **average cost per consultation is approximately £20 for CPIPs** in this scheme (including GP supervision).

[1] Clinical Pharmacist at site 2000 withdrew part way through the scheme due to personal reasons
[2] Long term conditions review includes - AF reviews, DMARDS, COPD, Asthma reviews, Anticoagulation reviews, Chronic kidney disease
[3]Urgent care is defined as - Ear infections, Ear wax, UTIs, skin conditions, minor ailments

Methods

The qualitative evaluation work commissioned to be undertaken by the University of Nottingham outlined a series of key questions relating to the operationalisation and outcomes of the pilot scheme. A full list of research questions is in Appendix A.

An ethnographic approach was taken to this service evaluation with an emphasis on developing a detailed and situated understanding of how the intervention was organised, delivered and experienced in the context of different care settings. All six sites were visited for an initial meeting with key stakeholders. A second visit to each site was undertaken in which the CPIPs were observed undertaking consultations and semi-structured interviews were held with key stakeholders in the practice. Observation data was also collected from CPIPs training courses, and stakeholder meetings. A third visit was undertaken, repeating the activities of the second visit, at a 4-5 month interval from that visit. A focus group was held with patients at each site.



Ethical approval for the project was sought from the University of Nottingham Faculty of Medicine and Health Sciences Research Ethics Committee and confirmed that this project was service evaluation. Governance approval was also given locally from NHS England and representatives from all local CCGs areas involved in the study.

The total data set from the one year evaluation utilised 75 independent sources of data collected from over 96 direct participants. Observational data was collected on at least ten separate occasions, covering at least 45 patient consultations. Interviews were conducted with 18 primary care staff and 33 patients through 5 patient focus groups.

Data was subject to interdisciplinary thematic analysis using emergent categories as well as the consolidated framework for implementation research.

A timeline of site visits and observations and qualitative data collected was reported monthly and is included in Appendix B.

Findings

The quantitative routine service data collected by pharmacists in situ, analysed and presented by programme managers (Ellis and Quinn 2017) aimed to provide numerical measure of the scheme. This qualitative research draws on the statistical data presented and seeks to explore and understand the implementation and outcomes of the project from the perspectives of multiple stakeholders.

The findings section is split into two key areas: the early onset of the scheme – Implementation and the outcomes of the scheme.

Implementation

This section outlines the key findings of data analysis relating to the scheme implementation and these findings have useful implications for the rollout of any future schemes.

Scheme Management

The roles of the managers of the scheme, both from a business and clinical perspective, were key to the success of the scheme. The actions of the managers helped to overcome hurdles, drive a set of common but variable goals, and ensure the overall success of the scheme.

At one site there were some significant barriers to the success of the scheme which were successfully navigated by the management team. This included personality differences between practice staff and pharmacist, changeover of local staff leading the pilot and clashes between the motivations of the site and the pharmacist.

Without the scheme managers there would have been no-one providing hands-on oversight and tracking of the scheme to ensure that the rollout was live and successful. The managers had a crucial role in negotiating key deliverables with sites and tracking and analysing key performance indicators (KPIs).

The project managers created a 'community of practice' including key stakeholders to drive forward learning from the project both across sites, and more widely across NHS partners. This was facilitated through local action learning sets, local monthly stakeholder meetings, and bi-monthly programme board meetings and wider dissemination through local and national networks including quarterly email updates to stakeholders.

Recruitment

Recruitment of community pharmacist independent prescribers to the available posts was more challenging than anticipated. Recruitment approaches varied; one site applied in conjunction with their CPIP, building on an existing relationship, and others applying independently to form new relationships. There was evidence of successful pilots recruited in different ways.

There were some difficulties in availability of CPIPs from community pharmacy resulting in recruitment of one pharmacist from secondary care. There was no difficulty in recruiting practice sites. Several practice sites indicated a preference for and benefits from being closely geographically located to community pharmacists' sites.

Induction

The majority of the sites had a minimum of 8 days spent on site focused on induction activities including shadowing key clinical staff and undertaking IT case based training. Two of the sites had existing relationships with their CPIPs and one of these as such selected a shorter induction period.

Clinical shadowing was seen as crucial to the role and its ongoing development starting in induction and continuing through the placement. Several days were spent at each site working on IT familiarisation; this was true even where CPIPs were familiar with the system but were now required to use it in a new way to record consultations, and whilst patient facing. All sites developed inductions locally, supported by managers who sourced and provided additional training and support where required. At most sites this included personalised IT training. Those sites who developed a strong induction programme built strong relationships and a scaffolding mentoring relationship. One site did not provide an induction and this site suffered some ongoing difficulties with relationship building, trust and mentoring.

Evidence suggests that a locally developed personalised induction scheme for CPIPs is vital to generate a sense of belonging and ground future relationships. This induction should last for 8 days or equivalent, regardless of the days and hours worked, and should include personalised IT training, clinical shadowing, relationship building with practice staff and strategic planning according to local demand.

Mentoring

Several of the sites work as GP training sites and have GPs who are active trainers familiar with the role of mentoring. Several sites reported transferring this approach to mentoring the pharmacist.

The successful models of mentoring are built on clinical training models of scaffolding (Waters and Wall 2008) where much support is given at the start of a task and slowly withdrawn as independence in the task and confidence are demonstrated. Two examples of this mentoring in practice are outlined.

At site 1000 the CPIP was mentored by the GP and initial scaffolding in the first weeks included reviewing every appointment and every action and prescription after each half day clinic. After the first two weeks this reduced to reviewing selected problematic cases daily, and after the first month this reduced to reviewing cases of the CP's choice weekly with the GP. After one month the CPIP worked independently accessing mentoring informally on demand and formally once per month.

At site 5000 the CPIP was given a list of 50 medicines that the GP was happy for him to prescribe unsupervised, anything the CPIP wanted to use beyond the list had to be approved by the GP. A similar method of consultation review to that described above also existed. Over a period of time the GP gave the CPIP further medicines and conditions to learn about and the list of medicines allowed to be prescribed was increased. Similarly the intensive mentoring was reduced from daily to weekly and over a period of time to an informal on demand model.

There was some mismatch in expectation over the amount of mentoring required. Several GP mentors expressed a lack of awareness of pharmacist capability. GP5 recognised that the pilot was top loaded with investment likely to be realised at a later point.

> ***Pharmacists will start off in a limited role and then as they get better, their competencies grow, there will be expansion****. I think it has been very useful for us because it has allowed us to evaluate what can and can't be done but it is early days. I think unfortunately* ***NHS England will want instant answers but realistically you probably need to run it for a couple of years to know whether it is useful or not****.'*
> *5015 CPIP Interview*

Summary

The management roles were vital to allow neutral support to both parties, to manage the scheme, overcome barriers and achieve KPIs. Future schemes would benefit from similar levels of complimentary management – business and clinical.

Recruitment was problematic due to limited supply of independent prescribing pharmacists in community pharmacy. There were high levels of success in implementation both where there were existing relationships, and where new relationships were developed. The scheme proved that hospital pharmacists IPs as well as community based IPs can successfully transfer into patient facing primary care roles.

Induction is vital to the success of the scheme. Typical induction periods covered 8 days whether this is 1 day per week or 4 days per week. Successful inductions included a period of clinical shadowing (with as wide a range of people as possible) and IT training. There is evidence that where no induction is provided this can create barriers to successful implementation.

Mentoring is successful where scaffolding from full support at induction withdrawing as confidence increases. Site should be fully briefed of the CPIP abilities and the front loaded investment time required in mentoring new posts to avoid mismatches in expectation.

This section gives useful guidance about contributors to the successful implementation of the scheme that might be useful and transferable to other similar contexts.

Scheme Outcomes - Capacity

Medication Reviews

As previously reported from routine service data 55% of the CPIPs work was in undertaking medication reviews. **All** sites agree that medication reviews free up time from the GP or nurse that would have undertaken them.

> *'Yes probably because **all the medication reviews would normally be seen by a GP**.'*
> *6105 PM Interview*

This capacity release allows other practitioners to focus on areas with less medication focus. Medication reviews were observed at all sites at both the start and end of the pilot scheme. It was reported that 43% of all UK patients are on at least one medication and of those aged 75 or older over 70% take three or more medications (Petty, Zermansky, & Alldred, 2014). Since all GP practices have to offer medication reviews to those on annual repeat prescriptions, the economic cost benefits of a specialist to deliver this service can easily be calculated.

The Practice Manager at site 3000 saw the role as an opportunity primarily to increase capacity

> *'So we saw the community pharmacy project as an opportunity. In terms of complaints, **the majority of complaints that I get, are around appointment access with a clinician**. So to alleviate that, we saw community pharmacists as an option' 3205 PM3 Interview*

The Practice Manager feels this target was met simply by medication reviews

> *'**He has been worth his weight in gold** in terms of the medication reviews that he has taken off the GP's.' 3205 PM3 Interview*

They would continue with the role simply for this benefit.

> *'We want to have a look what works for us, and as you have heard today**, the medicine management side is really making an inroad into freeing up GP time and more appointments time**, they will want to have a continuation of that model' 3205 PM3 Interview*

Conducting medication reviews is something that all CPIPs felt confident to deliver from day 1 of the scheme. GPs felt confident that this task exploited the CPIP's expertise in medicines and mentoring through this task built confidence and trust for both parties. Patients supported this as a positive use of expertise

> *'It's got to have been wonderful for the doctor and the rest of the staff, that somebody is there to deal with us as well instead of taking up other people's time, you know, probably worse than we are.' (Patient 1006 Data 1111 Patient Focus Group)*

> *'It was extremely helpful but more importantly, the times that you are able to see [CP3] to discuss medication, you are not taking up a GP's appointment.' (Patient 3001 Data 3110 Patient Focus Group)*

All pharmacists conducted medication reviews both by telephone, and face to face, according to the needs of the practice, patients and strengths of the CPIPs. By their sixth month all CPIPs were also delivering off site, domiciliary and care home medication reviews.

The average length of a medication review varied enormously depending on the level of polypharmacy, patient demand and pharmacist confidence. Time taken to conduct a holistic medication review usually exceeded the 10 minute slots which are allocated for GP consultations. The time taken to conduct medication reviews reduced over time. In early observations medication reviews took on average 30-60 minutes; in later observations this was 15-30 minutes. It is important however to emphasise that reviews always varied according to patient need. Although medication reviews by CPIPs took longer on average than those by GPs, they were in fact still more cost effective; commissioners calculated the cost per consultation of CPIPs in the local pilot scheme to be £20 on average. Given two key factors - that this cost includes early intensive scaffolding provided by other staff, and that CPIPs deliver the service faster later in the scheme, this is a cost that is likely to be decreasing over time.

Having CPIPs conducting medication reviews saves money for a GP practice from day one. This is true even where mentoring support and/or referrals are required. The CPIP at site 2000 feels that his role significantly saves capacity for the GPs in the surgery, even if he sometimes has to make referrals.

> *'Say if you have got 10 patients and you have seen 8, and then only need to see the 2 that need to... **You know that you have saved that doctor those 8 appointments.** All he patients I am seeing now, are not being seen by a GP or an ANP, and they are seeing more people on the day.' (2103 CPIP Interview)*

This is supported by both the GP and Practice Manager at site 2000. The GP explains

> *"…we are a busy practice and we get behind with med reviews and lots of things. I think he has started doing quite a few asthma reviews too and that is all time that either a GP or a practice nurse would have spent doing so that would have been time freed up." (2105 GP Interview)*

From the improvements in capacity in the practice by month 6 of the pilot scheme PM has decided that the pilot ***is*** a successful proof of concept.

Medication reviews conducted by CPIPs also add value in quality to the patient experience and these benefits are explored in the next section of the findings.

Medication reviews add value to the primary care mix by releasing capacity from other staff who would otherwise complete medication reviews. Patients recognise this benefit.

> *I think your medication review that you have with the GP every 6 months, should really be done with the pharmacist, yes, because there is so many patients here everybody hasn't had the opportunity to take up on that. Ideally **medication reviews, if they could come off the GP and give a bit of breathing space in the GP surgery but be done by someone, and not taking anything away, that is actually better at it.'** (Patient 4003 Data 4106 Patient Focus Group)*

Cost benefits are realised at all levels, especially in off-site reviews. By month 6 all CPIPs are undertaking medication reviews off site both domiciliary visits and care homes.

Responding to the needs of care homes is a significant cost to primary care and various innovation models are being proposed to manage this demand efficiently. (NHSE, 2014, 2017) Since care homes patients aged over 75 are known to be three times more likely to be admitted to A&E (Oliver, 2016) it is clear that improving models of primary care support also have the potential to reduce hospital admissions. (NHSE, 2017; P. Smith, Sherlaw-Johnson, Ariti, & Bardsley, 2015)

Data collected nationally in the UK by the Personal Social Services Research Unit shows that the cost of a GP undertaking a home visit in 2016 was £108 (Burns 2016). When compared to the calculated hourly costs for a clinical pharmacist working in general practice it is clear that CPIPs conducting this work instead of GPs represents a big cost saving for both the practice and the NHS.

CPs were observed delivering off site medication reviews. One CPIP was observed working at two care homes. The CPIP was able to prescribe remotely at the care home sites using a SystmOne connected laptop with wireless connectivity provided providing a seamless service to care home staff and patients.

CPIPs report that they enjoy conducting medication reviews which utilises their medications expertise and gives them experience in patient facing consultations. However it is important to note that over time medication reviews can become tiresome for CPIPs who crave a wider work experience to maximise the potential benefits of their skills. It is therefore important that while medication reviews form a base for the CPIP work, they are not the mainstay or only beneficial use of pharmacists' knowledge and skills.

The Practice Manager at site 5000 discusses the benefits of an open service specification and the clear and scaled development plans which the practice had for the CPIP role, starting with medication reviews.

> *'**Our main aim was for [CP5] to come in to do things like home visits and medication reviews for patients that were house bound**. So that was stage one, stage two was to do medication clinics, like 6 month reviews' (5104 Practice Manager Interview)*

The total number of medication reviews conducted by the CPIPs on the pilot scheme as reported in routine service data as 55% of the total number of consultations; 2% of these were reviews undertaken in care homes or domiciliary locations.

Prescription Queries / Appointments

The second work task that CPIPs were observed conducting from day one of their role is responding to prescription or medication queries from patients, colleagues across the practices and other colleagues off site including community based allied health professionals, community pharmacies and hospitals.

This work is more difficult to measure economically since it does not require a fixed recorded appointment slot, or trackable record keeping. It is however something which was witnessed occurring at all sites from the onset of the scheme and something which many key stakeholders confirmed as a benefit of the scheme. One CPIP reflects on how GPs previously fitted in responding to prescription queries and how they have lifted some of this workload.

> *'Something I have noticed, the workload in terms of like the script queries,* ***they have noticed when I have not been there which is good****. And it's those little bits, because obviously, the queries they do in between their clinics, they do clinic, they do the queries, they do the home visits, and back to clinics. They don't have much time, so if it frees up a half hour slot then they are probably very grateful.'* *(6109 CPIP Interview)*

CPIPs were observed giving advice based on their experiences in community pharmacy. One patient called her GP practice requesting a prescription for pain relief for a child with chicken pox. The CPIP was able to respond to the patient and give medication advice and direct the customer to the community pharmacy for free medication on a local minor ailments scheme (Pharmacy First) that the patient had been unaware of. These instances represent time saving for other clinical professionals in the practice and cost saving for the NHS.

As confidence builds in the CPIP role queries come in from other key practice staff

> *'So I have had a few times when doctors have sent me messages saying they are unsure what drug to prescribe, they know they want to prescribe drug x but they don't know whether it is available or that sort of thing. They've also come back with queries saying I have tried this drug, is there another alternative?'*

There is a clear value to the potential safety and improved care benefits of knowledge sharing in a multi-disciplinary team. This is a benefit which is impossible to quantify economically.

Chronic Disease Reviews

All sites utilised CPIPs to undertake chronic disease reviews with patients, overall these represented around a third of all patient facing consultations undertaken in the pilot scheme. Observations collected evidence of reviews and clinics targeting a wide range of chronic conditions including asthma, diabetes, and CKD. This both released capacity and generated practice income via the QOF scheme (Chew-Graham et al., 2013). At some sites, chronic disease reviews were run alongside medication reviews from day 1. At other sites these reviews were developed at a later stage. By month 6 of their pilot all CPIPs were undertaking chronic disease reviews therefore both improving capacity and generating income. This work varied according to local demand and often mapped to QOF targets therefore hitting multiple economic targets by simultaneously both improving capacity and generating income for the practice.

'So hopefully that, as we get to the end of the QOF year because that will take some work off our asthma nurse so we shouldn't have as many asthma reviews, it will save more nursing appointments because they are not having to come in for their blood pressure check and that sort of stuff. Yes otherwise they would have seen the nurse or GP for their medication review.' *(6105 PM Interview)*

Practice staff understand that the CPIPs work on chronic disease management makes a significant impact on managing demand and releasing GP capacity. Patients also demonstrate recognition of the benefits of the pharmacist role to managing chronic conditions.

'I am happy with it yes because it's wasting time of the doctor, on a recall just to say if your blood pressure is ok, it seems a bit overkill. You know, the National Health Service is in trouble, they say they want the doctors to do more, the doctor can't do more than 8-9 hours a day. I don't know how many patients they are seeing now but there is a fine line to what they can do. So anybody who can give them the help, taking off I wouldn't say the easy but the more mundane jobs, it has got to be better for everybody.' *(Patient 6007 Data 6110 Patient Focus Group)*

Patients also recognise the potential wider impact of chronic disease management on wider NHS systems

'I think as well if you have got long term conditions and people's illnesses are much more complex, people are living so much longer, I think there is so much pressure on the health system, I think if pharmacists could alleviate some of that pressure by supporting or whatever. Because it is not going to get any better, it is just getting worse. ***If by having a pharmacist, you can keep those people out of hospital, and avoid hospital admissions, it would be fantastic*** *(Patient 1002 Data 1111 Patient Focus Group)*

CPIPs can clearly make a positive impact on the management of chronic diseases and their associated medications. This positive impact can improve access to primary care for patients and reduce demand on secondary care therefore saving money.

Discharge Management

At all sites, by the end of the pilot scheme, CPIPs began work on managing discharge medications. The majority of CPIPs started the development of the role in to discharge management in the second half of the scheme. At two sites, one with an existing relationship with their CPIP at the onset of the scheme and one with a hospital pharmacist, discharge management was conducted from an earlier point in the scheme.

The management of the discharge process has significant impact on readmission rate (Howard-Anderson, Busuttil, Lonowski, Vangala, & Afsar-manesh, 2016). The commissioner's own data shows that the CPIPs pilot scheme potentially reduced avoidable secondary care admissions by around 8% saving the NHS a potential £710k per year.

Acute Care

At all sites by the end of the pilot scheme CPIPs were able to contribute to the management of local acute and urgent care. Some CPIPs developed this work in the first half of the pilot but most developed this work over a longer period of time towards the end of the scheme. Overall around 7% of the CPIP work was in acute and urgent care.

Examples of acute care appointments were wide ranging and included

- Coughs, colds and sore throats
- Chest and breathing difficulties
- Head lice
- Ear wax and hearing difficulties

The Primary Care Foundation (Carson, 2009) reports that nationally approximately 100 million same day appointments are made; This represents approximately a third of all overall visits across 8000 practices in England in one year. This research demonstrates that CPIPs have the potential to make an impact on this area of demand in primary care.

Capacity Conclusion

There are a wide range of ways that CPIPs can release capacity to the Primary Care team and contribute to managing demand. As soon as they are in post CPIPs can undertake medication reviews and respond to prescription queries which immediately releases GP capacity and saves money for the practice. Through a scaffolded mentoring process CPIPs can begin chronic disease reviews in the early stages (first 6 months) of the role and be in a position to undertake them independently thereafter. This work releases further capacity and also generates income through the QOF scheme. Practices can focus chronic disease work around local demand and respond to strategic needs. Patients are aware of problems in primary care and recognise the benefit of increased access to their practice as an output of the CPIP role.

> *'You know with the NHS, I don't know if anyone watched the news, but there is a lot about how much it is costing the NHS. To be honest I got the impression there was a lot of waste reducing that could take place. I know it is harder on a bigger scale but I think if you can do it chunk by chunk and doctors are one of the areas.* ***Patients are moaning that they can't get an appointment for a long time, then this actually shows that this is a positive way of dealing with that problem.*** *It is one of the major problems patients complaining can't get an appointment whereas all of us has kind of highlighted, he has kind of offered an appointment very quickly.'* *(Patient 5005 Data 5108 Patient Focus Group)*

CPIPs who have been working for over six months, or who have experience of secondary care can support the primary care role in the discharge process. This work releases capacity, improves service and can have a significant impact on preventing readmissions therefore saving NHS spend in both primary and secondary care.

Overall the Practice Managers suggested the scheme was a successful proof of concept as it showed how pharmacists can fill the gap currently left by the GP supply-demand issue.

> *'I would certainly see that* ***if we were ever in a position that we needed to recruit another GP, that we would certainly be thinking about recruiting a pharmacist first to add to that skill mix****, particularly if on the day acute and management chronic disease, you know there is a huge role for pharmacy there, and* ***I would almost say that I would lean towards a pharmacist rather than a nurse*** *if I were recruiting. Because I think it is a definite unique role in terms of practice, it's not a nurse, it's not a GP,* ***it's unique****, so I think if you are going to get the best benefit from having a skill mix you need to broaden that as widely as you can. I think you know there is no mistaking the fact there aren't going to be enough GP's in the system and they are going to end up very, almost consultants in a practice, you they are the top of the tree which people refer to for specific criteria and the rest of the workload is managed differently in the practice. I think if pharmacists have a true role going forward then there needs to be some further work in how they can meet the rest of the GP workload'* *(5104 PM Interview).*

The evidence collected clearly demonstrates the ways in which the work of the CPIP releases capacity for GPs and nurses. Improving capacity was a clear driver for the stakeholders in the scheme. **The data collected supports the concept that clinical pharmacists can have a positive impact on the current supply-demand issues in general practice.**

Scheme Outcomes - Quality

Holistic Patient Centred Care

Feedback from all key stakeholders demonstrated high levels of quality in CPIP patient facing consultations. Routine service data demonstrates that CPIP appointments were twice as long as GPs in general and this is supported by research evidence which observed consultations lasting from ten minutes to over one hour (from the same as a GP to 6 times longer). Through longer appointment times CPIPs were observed giving 'holistic' patient care, able to consider the patient as a whole combination of conditions and medications rather than focusing on one condition and considering it in isolation.

> "*They usually just concentrate on the bit that is causing problems; they don't have time to do anything else. 10 minutes, they don't have time. Like I say it was an hour."* *(Patient 3002 Data 3110 Patient Focus Group)*

Patients at **every** site reported positive experiences and significant benefits due to longer appointments.

> *'I didn't feel any rush at all. I could talk about everything and he could explain things. He took his time explaining absolutely everything.'* *(Patient 3001 Data 3110 Patient Focus Group)*

Patients recognised the benefits of longer appointments with the CPIP compared to standard GP medication reviews or single condition consultations.

> *'Normally when you go to the doctors, they only look at that one issue that you have gone in with, they don't explore others because they have got other patients to deal with, that haven't got time.'* *(Patient 5003 Data 5108 Patient Focus Group)*

> *I mean with my medication before, it was just a case of the doctor thinking oh yes she needs so and 'so, adding it to the prescription. I never felt that they had time to look at the whole lot.'* *(Patient 3001 Data 3110 Patient Focus Group)*

On multiple occasions CPIPs were observed undertaking 'joint' consultations between family members, or with elderly people and their carers. One CPIP was observed undertaking a consultation with an elderly couple and their middle aged daughter who cared for them ensuring knowledge was shared and reinforced. In the care home observations, patients (with capacity) were invited to consult with the pharmacist and their care staff and some chose to do so. CPIPs also worked closely with domiciliary and family carers who all gave positive feedback.

> *'It was actually a really long consultation, really thorough. I think probably looked at my mum as a whole, even though she wasn't there.* ***I actually felt that he knew my mum even though he didn't.*** *When I say didn't, he understood her medication and he even went through one of her blood tests with me. Because she was taking ibuprofen, he actually said really she would be better with a gel because of it affecting her kidney function*.' *(Patient 3002 Data 3110 Patient Focus Group)*

Patients reported no concerns with an appointment with a CPIP and often reported preference for a longer appointment with a CPIP than a shorter appointment with a GP.

> *"You were able to get some quality time with a clinician. Because obviously with the GP's you get 10 minutes and you try and squeeze everything into that. With [CPIP4] you got about 20 minutes , or sometimes over 20 minutes and it was not just with medication, it was to do with things like lifestyle issues, with the best will in the world, GP's can't tackle in 10 minutes.'* *(Patient 4001 Data 4106 Patient Focus Group)*

This is reinforced by GPs who recognise the limitations of their current working systems

> *'I think (CPIP5) does go into details a lot more with that and he has certainly picked up on some patients, their GFR is not so good, they are on this medicine shall we change things? The quality is undoubted. I would absolutely say the pharmacist when it comes to medicines, partly that may be time, but he has looked at things and there is a quality element on top of that.'* *(5103 GP Interview)*

Medicines Understanding and Adherence

100% of patients surveyed by Programme Managers reported that they had a better understanding of their medicines as a result of their appointment with the CPIP.

> *'I think I have had some people come in who don't know how to take their tablet. So, they might have had some medication from the hospital and they were just a bit confused and unsure, the doctor at the hospital said take these tablets and then they have gone away and then gone oh what do I do? How do I take them, or what are they for, why am I taking these? I've explained the reasoning behind that.'* *(3103 CPIP Interview)*

All CPIPs were observed in an educational capacity, filtering knowledge about conditions and medications to patients.

> *'She just went through each thing, one by one, asked me how it was working for me; how I felt about it and did I really understand what it was for, why I was taking it.'* *(Patient 1001 Data 1111 Patient Focus Group)*

CPIPs believe there is an educational role in relation to medication that their unique skills benefit the practice. Comments from his patients support this,

> *"I felt that he had a little bit more time than you generally find with the doctor. He was able to discuss how are you getting on with the tablets, are you taking them on a regular basis. Because I was a bit haphazard a little bit with mine. I had a discussion about the importance of this so yes, I felt it was a little bit more of a one to one and not sort of ok, right, next. Do you know what I mean?* *(P3002)* *Yes like he was focused on me the entire time I was in the room and not sort of like right, ok there's your prescription, bye."* *(Patient 3001 Data 3110 Patient Focus Group)*

The public health education role of the CPIP was observed as a cross cutting benefit through the medication reviews, chronic reviews and prescription queries. The CPIP at site 2000 reports on the benefits of also undertaking asthma reviews and using the opportunity to provide education

'People that are not well controlled, so they are using their blue inhaler. They were using it ad hoc, fine, once or twice a month. All of a sudden they are using it 3 or 4 times a day for about 3 or 4 months, so they are not in control, from being in control they have gone out of control. 'Isn't that normal?' no it's not and then step their treatment up. So will we add on a steroid inhaler, a preventer. Then that should prevent them from having more symptoms in the first place as well. Other things that we have done today like device checking technique, that is really important. More patients than not are not using their devices correctly. So they are not getting the drug into their body. So it's not in terms of the medication not working, it is not being used correctly. So they are not getting the drug down, and ***before you try to change the therapy you just make sure that what they are doing now is correct first****. So try to do that first before moving on, so that's really useful as well. The intervention on them is making a massive impact. The NHS is spending all this money on medications that are not being used correctly, it may as well not be given.* ***The patient benefits, they are gaining control, they are not having to make all the appointments again because they are not in control again and again****. Check their technique and they get the best out of their medication, so not having things added on.'* *(2102/2103 CPIP interview / Consultation observation field notes)*

There was evidence of the longer and more holistic appointments with the CPIP offering education to patients that had not been previously possible in GP appointments.

'His advice to me, like I say I tend to bit and bob a bit with my tablets, wait for the pain to come and then take them, when I should be taking them regularly every day. I think he had got a diagram up on the screen to show me. Because I had told previous doctors I just take them when I feel that I need to. And I have always been ok that's fine. But when he said you do know they will have better effect if you take them every day like they are prescribed to take. So I said well why would a doctor say it's ok? He showed me a diagram and said this is what will happen if you just take them as and when, it will ease it for a little bit, but if you take them regular then it stays in your body and it is there all the time.' *(Patient 5002 Data 5108 Patient Focus Group)*

This is supported by data from GP interviews

'Our patients have demonstrated that they do need time, they do need half an hour to explain what they are taking, and hopefully that will have results and that is good.' *(5103 GP Interview)*

There is significant research evidence that increased medication knowledge leads to increased adherence (Horne & Weinman, 1999; Julius, Novitsky Jr, & Dubin, 2009). Several patients discussed improved adherence as a result of increased knowledge. One repeated case in point relates to public knowledge about statins. In several consultations patients were given advice to take the statin at night, which appeared to be information they had not had before.

'She said do take this at night because your body only produces cholesterol when you are asleep. I didn't know that. A lot of people don't know that.' *(Patient 3001 Data 3110 Patient Focus Group)*

Future research measures may include recording of patients' medication adherence post-education to quantify the link. Interestingly patients gave examples of sharing examples of new knowledge in their own communities which has an immeasurable positive impact on public health.

> *'My brother, who lives many many miles away from me, also takes the simvastatin. One time when I was staying there with him, I saw him taking it in the morning. I said 'is that your statin? Because I recognised the colour of it. He said yes, I said you shouldn't be taking it in the morning, you should take it at night.'* *(Patient 3001 Data 3110 Patient Focus Group)*

NHS England estimates that 5% to 8% of unplanned hospital admissions are due to medication issues. Often the full course of prescribed drugs is not taken because of a failure to monitor and properly encourage and instruct patients. This, in turn, imposes costs because conditions are not properly treated and become more serious. (Frontier Economics, 2014) This work to improve medication understand and adherence therefore can have both short term quality of life and health benefits for patients and longer term cost and economic benefits for the NHS overall.

We observed holistic appointments offering the opportunity to increase patients' knowledge and understanding of their medications; and patient reported data suggests that increased understanding leads to increased adherence. Furthermore patients report that they act as medication information ambassadors and public health experts in their own communities and therefore the impact of the CPIP role on increased adherence in public health seems likely albeit immeasurable. This work to improve medication understanding and adherence therefore can have both short term quality of life and health benefits for patients and longer term cost and economic benefits for the NHS overall.

Motivational Interviewing and Lifestyle Advice

Observational data shows that the quality holistic consultations provided by CPIPs often included lifestyle advice. This advice usually extended beyond typical measures of height and weight towards measurements and discussions related to smoking, alcohol, diet, exercise. This is a function which falls to the responsibility of primary care but is not often accommodated in standard GP appointments and therefore adds quality value to the CPIP service

> *'I think they probably don't, I would like to think they don't do it as well because they don't have the time and they might not go into as much depth as I might do. Maybe not necessarily that but more the angle that I approach it from really. So, they have only got 10 minutes, they might just check the patient hasn't got any problems, they have got enough of the tablets and they are taking all their tablets and that might be it. Whereas* ***I would kind of explore a bit more, like smoking, drinking, exercise, diets as appropriate.'*** *(6103 CPIP Interview)*

Consultations were observed where lifestyle advice was given as routine, and in discussion with patients many expressed how they valued the opportunity to be given lifestyle advice.

> *'So he said I had got to make sure I had plenty of water, a litre of water a day. The best way of making sure that you have it is get a bottle, just fill it up, and drink it through the day. He kind of explained that the counter effect it can have a bad effect on your kidneys, I didn't really appreciate that before. Then he just asked me about healthy lifestyle, do you eat good food and veg, do you exercise, smoking and drinking, that sort of thing. Sort of standard questions that he could give you advice which was the impression I was getting, to make sure you do the best for yourself. Again, it's quite a good service isn't it?'* *(Patient 5005 Data 5108 Patient Focus Group)*

Patients reported a number of changes in lifestyle following the advice of the CPIP.

> *'Yes I cut salt out, I've nearly cut chips out, I was eating too much bacon, too much processed meat like corned beef, ham, stuff like that. I've cut pastry out; he said do it so you have got to do it haven't you? He said all that is adding up to your blood pressure, it's adding up to your cholesterol , cut all that out and hopefully get it down.*' *(Patient 5003 Data 5108 Patient Focus Group)*

These lifestyle changes, whilst being difficult to 'measure' both the changes and their potential impact on the patient, it is clear that positive changes in lifestyle can clearly have a very positive impact on management of long term conditions – in particular CKD, diabetes and asthma.

> *'Only walking, no need to join a gym and pay fees. That was it really so I just walk regularly half an hour each day, or more than that. Just ensure that your intake, you are not overdoing it, I still go to the pub….they were things I already knew,* ***he wasn't telling me anything new, all he was saying was this would be best for you.*** *He knows I understand that.'* *(Patient 4005 Data 4106 Patient Focus Group)*

Driving forward improvements in lifestyle CPIPs often used an approach of 'motivational interviewing' in the consultation to drive forward improvements. Many patients confirmed that lifestyle advice was not 'new' knowledge but the context of having the information delivered by a clinician in relation to their health was motivational.

> *'I mean I know what I should be doing before he talked to me, he just reinforced it'* *(Patient 1001 Data 1111 Patient Focus Group)*

Some advice given was reactive to patient health and on other occasions it was preventative and proactive.

> *'I will do it anyway, it is the point of I am in the recovery process really so obviously I knew I would have to do it, hearing it is good because it re-enforces that and makes me know I have definitely got to do it because blood pressure runs in my family, strokes runs in my family.* ***So that just re-enforced it really it was good to have somebody actually tell you.****'* *(Patient 4006 Data 4106 Patient Focus Group)*

Some CPIPs routinely delivered lifestyle advice in every appointment and others personalised the delivery of lifestyle advice according to the specific patient needs.

Several patients across different sites gave examples of where lifestyle advice from CPIP consultations motivated them to action.

> *'I lost 1½ stone in weight and also increased my exercise.'* *(Patient 4006 Data 4106 Patient Focus Group)*

> *'And it [BP] has gone down a lot. Yes I have to fasten my belt another hole! I don't get out of breath so much now.'* *(Patient 5003 Data 5108 Patient Focus Group)*

One patient reported stopping smoking after fifty years, on the advice, and with the ongoing support, of the CPIP in the GP practice.

One CPIP feels strongly that contribution to positive public health should be a key driver for the NHS and should use the CPIP role as a channel for health education

> *'So screening services, health checks, healthy living, these are the top 5 {conditions}, that are causing the biggest problems. So just hit the top 3 or top 5. Health education is improving the uptake of medication, they know what they are doing AND they will support lifestyle changes along with the medication. NICE guideline tells us to identify patients for education. Everyone must have health education, but how many actually have it? Only 2%!'* *(5105 CPIP Interview)*

This CPIP builds lifestyle advice into every consultation and uses motivational interviewing (in which he has had prior training) to motivate patients to commit to positive changes. This includes advice and guidance on smoking cessation, alcohol reduction and management, weight and portion management and increasing exercise. The CPIP utilises a personalised approach and self-devised materials to encourage ALL patients to commit to small stepped changes in their lifestyle to improve their health. A copy of the materials used are held at Appendix C.

Recent estimates suggest that smoking alone costs the NHS £2bn and the economic benefits of the CPIP work in positive lifestyle changes could clearly have long term measurable impact for patients and for the NHS.

Quality Conclusion

This section has demonstrated the ways that CPIPs deliver holistic patient care, through longer appointment times and considering the patient and their range of conditions and medications as a whole interacting system. By ensuring patients understand their medicines more, CPIPs increase medication adherence which leads to more efficient and effective use of medication and can have cost benefits. Finally data has shown how CPIPs use motivational interviewing and monitoring to generate lifestyle changes in patients which could have long term impact for their wellbeing and reduce the cost burden to the NHS.

Scheme Outcomes - Uniquity

Uniquity emerged as a key theme from the research data collected. In this category fall examples of where the unique skills and expertise in medicines held by the CPIPs benefit the patients, practice and Primary Care. These benefits can be seen through the examples given which also offer benefits of increased capacity and quality, but through the unique skills of the pharmacist. This is surmised by one of the supervising GPs.

> *'I think [CP5] does go into details a lot more with that and he has certainly picked up on some patients, their GFR is not so good, they are on 'this' medicine, shall we change things? The quality is undoubted. I would absolutely say the pharmacist when it comes to medicines, partly that may be time, but he has looked at things and there is a quality element on top of that.'* *(5103 GP Interview)*

Research data show a wide range of examples of the unique value added by the CPIPs. These can be broadly categorised into increased patient satisfaction and increased patient safety, wider knowledge within the primary care MDT team, and the opportunity for deprescribing.

Increased Patient Satisfaction

The research data shows many examples of CPIPs using their expert knowledge of medications, medicine interactions and potential side effects to adjust medication dosage or usage advice for the benefit of the patient having positive impacts on their quality of life.

One carer having a medication review on behalf of her mother who has Parkinson's disease reported an increase in quality of life from simple medications use advice

> *'She wears a patch, for her Parkinson's. He said does she have any problems with that? I said the only problem she has, she gets a rash. And he said well how you get rid of that is that before you put it on, just leave the air to it for 2 minutes, because it allows the solvent to evaporate, and then put it on. My mum can't believe it, because it has not itched and she has had it for years. It has drove her absolutely mad.'* *(Patient 3001 Data 3110 Patient Focus Group)*

One patient attending for an acute appointment due to musculoskeletal pain was advised to stop taking the ibuprofen advised by others due to an awareness of the interaction with stomach medication also being prescribed. This resulted in reduced symptoms of stomach pain for the patient, which although present was a secondary presentation in the consultation and it is therefore unlikely would have been picked up by another clinician.

One middle aged female diabetic patient expressed ongoing symptoms of painful, sore and swollen eyes. She had visited the nurse on multiple occasions that had been unable to rectify the problem. This had been ongoing for a long period of time and as a result she had stopped wearing make-up, become less confident and went out less often. The pharmacist recognised an adverse interaction between several medications and was able to represcribe and eradicate the life limiting side effects. The patient was emphatic about the benefit of the CPIPs expertise.

One CPIP reported an issue from a care home

> *"…at times the patient becomes agitated and wanders round upsetting others. She doesn't have dementia, she is in the home because she is frail. She has diazepam for agitation and it's a controversial area because it's a* ***chemical cosh*** *really. She takes it herself, so she consents to take it. They were giving her half a tablet and it was zonking her out. The son had been to visit her and she spent most of the time drowsy. They had only used occasionally, three times in 4 weeks, but naturally her son was unhappy. Then they explained and all agreed it is a good idea as she was a danger to herself and upsetting others who were then threatening towards her. I improvised a little, it is soluble in water so I suggested we dissolve it in 10 mls and then give her a bit at a time so you can control the agitation but she is not completely zonked. We also spoke about her diet because she has lost weight."* *(3103 CPIP Interview)*

Each of these examples show ways that adjustments made to medications prescribed or advice about their usage had positive impacts on the lives of patients and carers in a wide range of settings.

While these examples are impossible to quantify in terms of economic benefit, each offers a useful understanding of the tacit and immeasurable ways the expertise of the CPIP can have far reaching positive impact on patient experience in Primary Care.

Increased Patient Safety

The above examples all show reductions in small scale side effects and their positive impact on patient health and wellbeing. There are further examples where the role of the CPIP has avoided potential larger scale impacts which could have had an adverse impact on patient safety. On some occasions the CPIPs were observed rectifying prescribing or dispensing issues which may have had adverse effects patient safety.

There is evidence that one key area of the unique expertise of the CPIP is their process of safety checking of medicines through the usual consultation process. The following example in an extract of field notes from an observation of the CPIP at site 4000 shows preparation for a medication review and shows the safety reviews that the CPIP was observed undertaking in a normal polypharmacy medication review.

Female patient, 59, 16 items prescribed - multi comorbidities. This includes recurrent UTIs, blood issues, CKD, osteoporosis, overweight, thyrotoxicosis, angina, BP issues.
I want to check she has no GI problems as she is on aspirin, it's a high dose so I'll talk about diet and calcium. Propylthiouracil can cause problems with blood disorders so I want to a make sure she knows the side effects. I don't know why she is on it, they tend to use carbimazole, perhaps she reacted to that at some point. CPIP googles the medicine, then looks in the BNF, he explains he is looking for liver problems as a side effect. **I don't want to scare them to death but they do need to know things to watch out for.** *She is on risedronate, I'll have a look how long because some of these people should be reviewed after 5 years. Ah next year will be her review, she has been on it since 2012. She should have had a bone scan in August last year but didn't so I will talk to her about that. I'll check she has had her bloods done recently. Yes liver check in the last year so that is fine. Kidneys aren't bad and urea is up a bit but that just shows she doesn't drink enough water.*

Figure 4 CPIP4 Preparation for medication review (safety check)

Further examples from other CPIPs show that safety checking is a unique skill common to all the pharmacists.

CPIP took a prescription query; telephone call was received by site 4000 from patient who had been prescribed antibiotics (and they were dispensed and in hand) but was worried about potential side effects. During the telephone consultation the CPIP realised that the patient was schizophrenic and that psychosis was a potential side effect of the medication prescribed so she was able to immediately change the prescription to one with less side effects, and made it available for the patient to collect from the practice immediately. In doing so she saved the patient from a potential adverse reaction, which could have had a further long term impact on her overall recovery, and responded to an error made by another professional which could have otherwise impacted patient safety and had a liability cost.

An observation of a CPIP conducting a domiciliary medication review for a patient recently discharged from hospital showed the importance of regular medication checks for the safety of elderly patients cared for in their own home. The patient was being given medication by care staff five times per day which she indicated caused her discomfort and the CPIP was able to reduce the medication administration to twice per day, reducing both the overall number of tablets to be taken and the frequency. When probed about her use and storage of medication the patient revealed a bag of unused medicines which she was keeping 'just in case' but which she willingly passed to the CPIP for her to safely destroy. Within the bag was a large number of paracetamol in a range of doses, tramadol (which is no longer taken by the patient) and nortriptyline**, some of the medicines being 3 years out of date.** The potential adverse side effects of these medicines being taken in error by the patient or another are high risk.

Another CPIP reviewed a case where they had given telephone advice to care home staff about medication for a patient who was an alcoholic with psychological problems presenting with a range of side effects. The pharmacist visited the Care Home to conduct a face to face medication review with the patient and carer and discovered that the medication dosage prescribed for the patient was toxic and needed to be changed urgently. This incident happened on a Friday evening at 4.30pm just before Christmas. The CPIP was able to use their unique skills and previous experiences in community pharmacy to ensure the urgent issue could be resolved before side effects worsened. It is likely that this action prevented an unnecessary hospital admission over the Christmas period.

> *'My familiarity with the medication supply and whole MDS [monitored dosage system] meant I was able to sort this out before the holiday break.'* *(4101 CP4 observational field notes)*

These few examples represent many others observed and recalled through the evaluation.

Practice staff recognised these benefits and their potential impact on the business of Primary Care. The Practice Manager at site 4000 identifies many ways in which the unique skills of their CPIP add to the practice portfolio right from the outset of the scheme.

> *"Improved risk management –* ***in the first week she picked up someone who should be on warfarin but it had been missed.'*** *(1102 PM Interview)*

The longer term risk of the patient not being prescribed the appropriate medication has a life threatening impact and while this is unquantifiable economically, patient safety it is of clear benefit to the patient, the practice and the NHS.

The cost of adverse side effects and sub-optimal prescribing to the NHS annually is estimated to be around £5billion. (Frontier Economics, 2014). A recent prospective cohort study has shown that, within 4 weeks of receiving a primary care prescription, 25% of patients experience an adverse drug event, 11% of which are judged preventable (Avery, 2002). While the independent cost saving by pharmacist or this pilot is difficult to quantify without further longitudinal individualised data, it is clear from the few examples shown that this role maximises safety and has positive impacts which have wide economic benefits for the NHS.

These sections have demonstrated the impact of the pharmacist unique skills, knowledge and experience and the ways these have positive impact on patient satisfaction and safety. Examples have been shown of the ways that CPIPs checking medicines use and adherence, resolve side effects and interactions, and resolve prescription and dispensing errors generated by others.

Expert Knowledge to the Practice and NHS

Examples of the ways in which the expert knowledge held by the CPIPs benefit the practice have been shown in previous sections where, for example, prescription requests and queries are triaged towards the pharmacist and also where GPs check their own medication knowledge with the pharmacist. Data shows that at practice 4000 prescription and medication queries are presented to the pharmacist by the full range of clinical colleagues associated with the practice including GPs, Nurses, Healthcare associates and community staff such as care home clinicians and district nurses. Further examples of knowledge sharing reported in the data include CPIPs contributing to GP and practice meetings and written staff updates with important medication advice, including NICE updates. The benefit of the

expert knowledge of the pharmacist on the primary care knowledge and skill mix was valued by all key stakeholders in the research.

Practice Managers demonstrate understanding that there is a unique role for the pharmacist and their expert knowledge in primary care in a way that can benefit patient care by adding valuable expertise to the MDT.

> *"I think it is a **definite unique role** in terms of practice**, it's not a nurse, it's not a GP, it's unique,** so I think if you are going to get the best benefit from having a skill mix you need to broaden that as widely as you can." (2104 PM Interview)*

> *'Yes because I think the pharmacist is an expert in medication. They know far more than the GP's do obviously it's their field. **For the practice as a whole, it's another expert in there**.' (5103 GP Interview)*

A GP from practice 5000 concurs and emphasises the benefit of the pharmacists' shared knowledge as support to the GP in their complex prescribing role and the way in which this can have wider long term benefits including patient safety.

> *'With the medication, because it is really important, especially with medication mistakes, with discharge summaries coming back from the hospitals. Obviously the doctor is ultimately responsibility for putting new meds on, for changing them; lots of patients are on anti-coagulant meds, warfarin, lots of complicated, lots of shared care schemes. So I think there is a need, there is definitely a need there,' (5103 GP Interview)*

Several GPs report that learning in the scheme is two way. The GP at site 1000 identifies that he benefits from mentoring the CPIP.

> *'Feedback sessions with her have been useful to date, both parties benefit. She queries anything she is not sure of and then **I learn things from her as well**, pharmacology wise.' (1105 GP Interview)*

Several of the CPs report that they feel valued by the recognition that GPs uses their initiative unique knowledge of medicines to supplement their own learning for the benefit of the patients and the practice.

> *'So I have had a few times when doctors have sent me messages saying they are unsure what drug to prescribe, they know they want to prescribe drug x but they don't know whether it is available or that sort of thing. They've also come back with queries saying I have tried this drug, is there another alternative?' (6107 CPIP Interview)*

The CPIP in site 6000 believes that the ultimate benefit of his role lies within his unique expertise

> *'I think it is working in the multi-disciplinary team and that extended working. **Utilizing our skills in primary care where GP's and nurses might not necessarily have that expertise**.' (6107 CPIP Interview)*

One patient reported the way that the CPIP worked in tandem with the GP to manage tachycardia by adding expertise in monitoring the condition and making adjustments to medication. The patient recognised the benefit of the CPIP expertise on the workload of the other practice staff.

> *'It's got to have been wonderful for the doctor and the rest of the staff, that somebody is there to deal with us as well instead of taking up other people's time, you know, probably worse than we are.'(Patient 5005 Data 5108 Patient Focus Group)*

The data collected shows that the unique knowledge and skills held by the CPIP in their patient facing role also benefit the wider practice staff. The role acts as a valuable channel for ensuring vital medical information is shared from NICE throughout general practice and to patients for their ultimate benefit.

Deprescribing Opportunities

Routine service data shows that medicines were stopped by CPIPs in **22%** of cases as they were not being taken or no longer necessary. This is underpinned by evaluation data with examples from practice where CPIPs save money on the prescribing budget in a number of ways. Several examples already given demonstrate reduction in numbers of medicines prescribed and removal of over prescribed items present examples of cost saving. Several of the CPIPs report feeling responsible for contributing to cost effective prescribing.

The CPIP at site 6000 feels that in day to day practice through good quality medication reviews there is often the opportunity to reduce unnecessary medicines therefore saving money for the NHS.

> '*I think getting rid of medicines off repeat prescriptions that people don't really tend to use anymore because you all tend to get into the habit of just ticking every drug on the list but they don't necessarily need really.' (6107 CPIP Interview)*

Evidence from the literature reports that while overprescribing or prescribing errors may not always result in "adverse events", they may result in unnecessary expense (Frontier Economics 2014). CPIPs clearly have the opportunity to practice cost effective prescribing habits which benefit the NHS on a day to day basis.

Several observations of medication reviews demonstrate CPIPs reducing or withdrawing unrequired prescriptions for (or doses of) paracetamol, aspiring, tramadol, laxatives and barrier creams. The CPIP at site 4000 was observed with a 69 year old patient who has been prescribed a branded drug by the GP and is moving her to the generic version of the drug. Each of these small savings in cost effective prescribing contributes to a much larger overall saving for the NHS.

National or regional changes to prescribing practices in primary care can be driven through the CPIP role. The CPIP at site 4000 reports using new NICE guidelines to drive her work resulting in both patient health benefits and cost saving for the NHS. She reports that NICE bought out new advice on anticoagulants and this filtered through to the Medicines Management Team at her local CCG. They provided her with a list of patients with AF at her practice meeting and set range of criteria including those not on any medication, or not on the new recommended ones or one another type which no longer met the guidelines. This represented a measurable cost saving exercise against the local prescribing budget and benefitted patients through improved monitoring and management of their condition.

Whilst deprescribing remains an important role, and was recognised by CPIPs, they are keen that this is not used as a measure of their practice in isolation from context. CPIPs recognise that their primary aim is patient centred care and that in some contexts this is incongruent with deprescribing practice.

Overall deprescribing remains an important part of the CPIP role and represents an area of significant economic benefit to the NHS on a strategic and economic level.

Patient as Ambassadors of the Scheme

Patients clearly recognised the unique benefits of the CPIP role.

> *'Efficiency, cost saving in terms of the fact that you have got doctors time can be used on other people. You have got more happier patients by the sound of it, everyone has got quite good things to say which is improvements in service and customer care' (Patient 5005 Data 5108 Patient Focus Group)*

Patients had ONLY positive things to say and were actively acting as ambassadors for the service

> *'I have mentioned it to quite a few of my friends up and down the country, they haven't got one, and they say 'oh that's a good idea isn't it?' So other people can see the benefits of it (Patient 4002 Data 4106 Patient Focus Group)*

Some patients were interviewed who had not experienced the CPIP service for themselves. One patient spoke positively about the service from word of mouth experiences.

> *"…it very quickly became known within the local community that there was a pharmacist there. Because **people felt they were going away with something good**. I live in the community, I have worked in this community for 30 years so I know a lot of people, and a lot of people were saying oh the pharmacist is good….And I went oh good, what is happening, what are you liking about it? **Oh you get a 20 minute appointment up at the doctors! People were saying they understand the medication more, they know why they are taking it. Some of them had come away saying I don't have to take such and such anymore.** I am not saying every single person has been elated by it but my first introduction of it was it is really good and that is from outside on the street." (Patient 5005 Data 5108 Patient Focus Group)*

Patients recognised the unique benefits of both the CPIP role and the pilot scheme as an innovative development in primary care.

Uniquity Conclusion

This section has given examples of uniquity – the way that the expert knowledge skills and experience of the CPIP adds value to their role. Patients report increased satisfaction through management of medication reactions and interactions to minimise side effects. CPIPs serve as an important safety barrier in primary care preventing adverse effects often from medication errors made by others. All stakeholders in the practice environment learn from, and benefit from, the unique medication knowledge held by the CPIP. The CPIP uses their unique knowledge to remove unnecessary medications from repeat prescriptions which represent cost savings to the NHS. The CPIP can act as a funnel of information and prescribing practice from national guidelines and supported by local area teams to practice cost effective prescribing. The CPIPs add unique value in a wide range of ways to patients, practice staff and the NHS at a broad economic level.

Theory of Change Models

The data gathered during this evaluation has be used to create diagrammatic representations of the implementation of the CPIP pilot.

There are two models, one which outlines the implementation of this pilot scheme and the second theory of change model summarises the key learning from the project that might have transferability. The difference between the two models shows the usefulness of the data collected in this evaluation and how it might usefully inform implementations going forward.

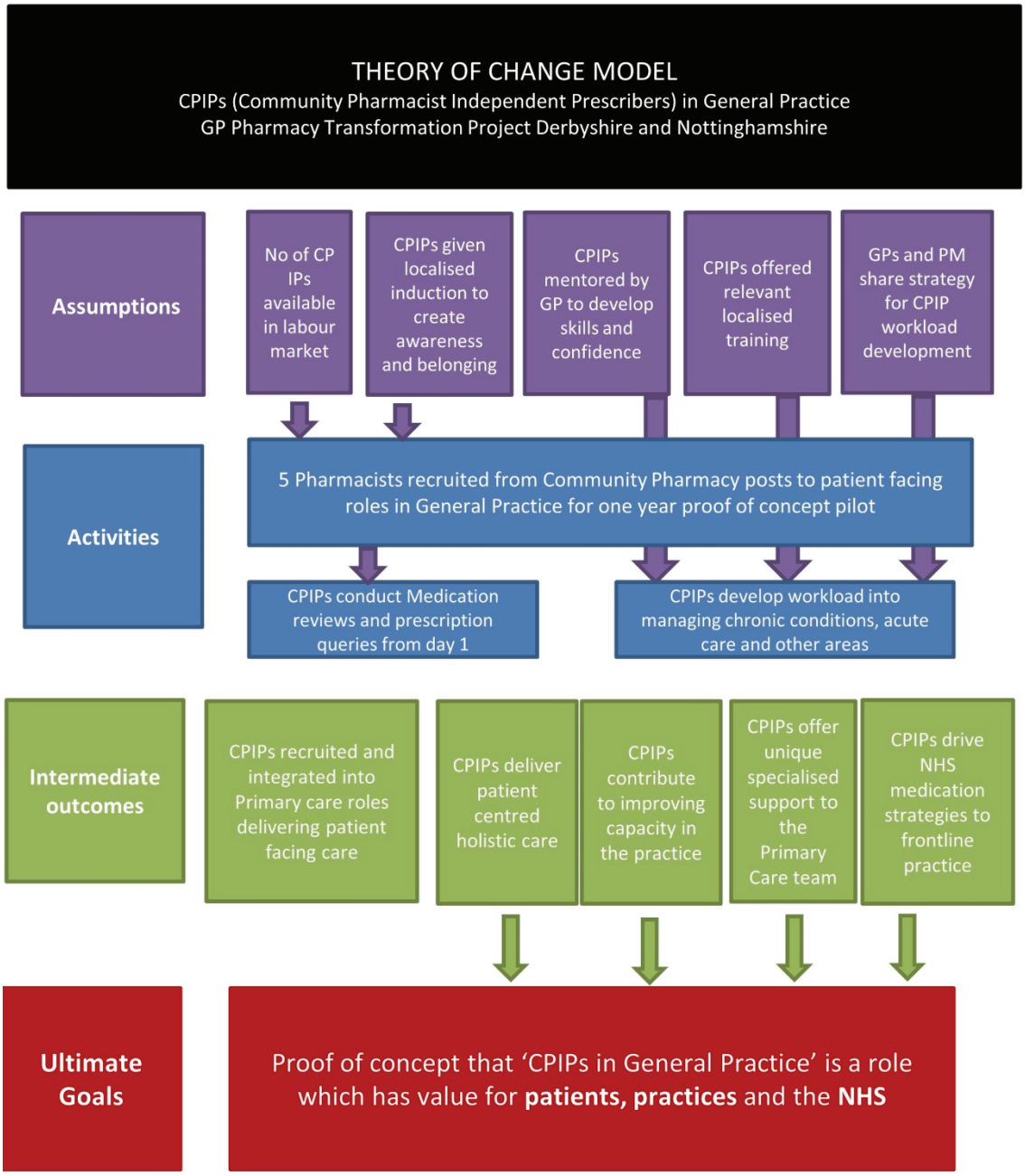


Figure 5 Theoretical change model created from the original design of the 'Community Pharmacist Independent Prescribers' (CPIPs) working in patient facing roles in Primary Care' pilot scheme.

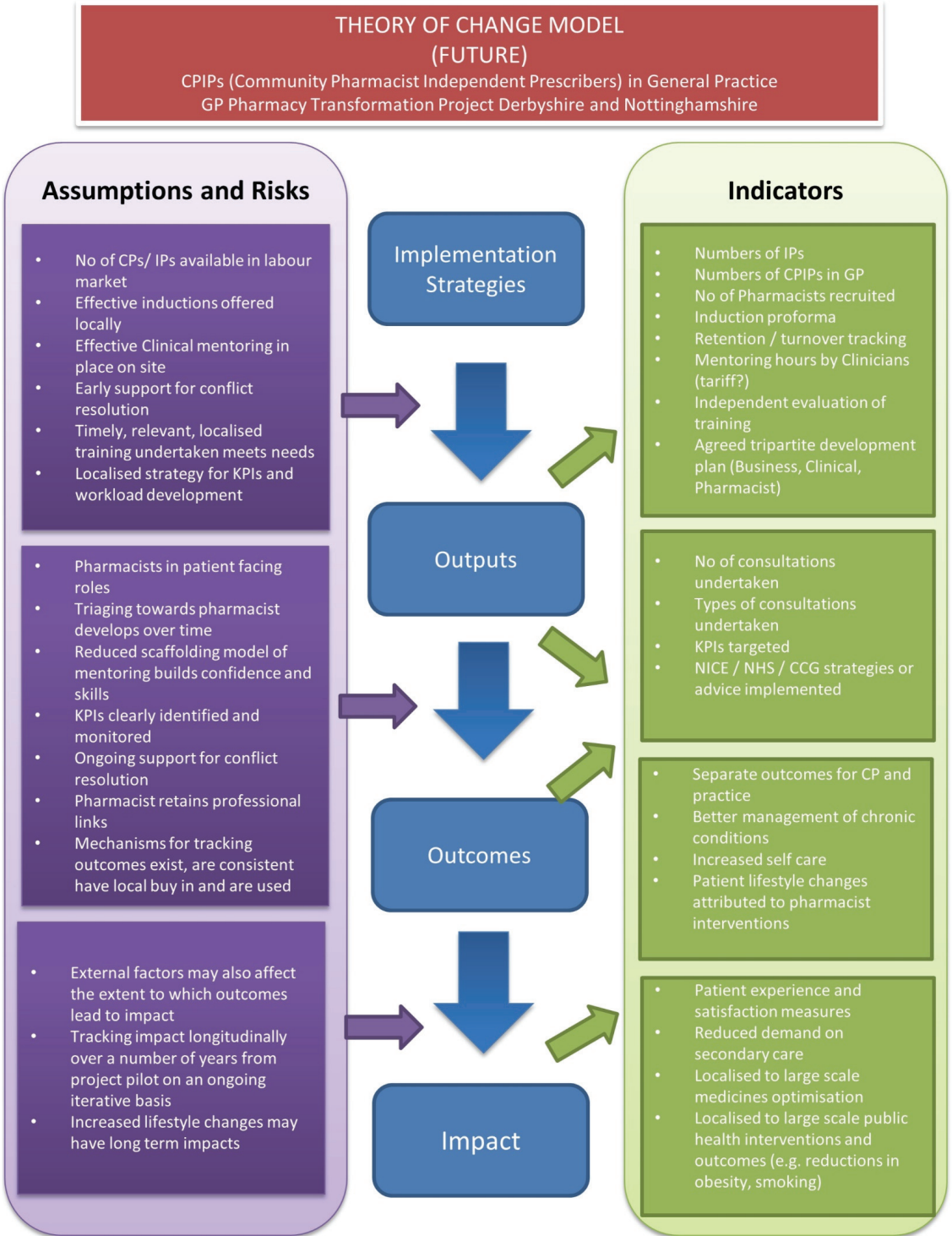


Figure 1. Theory of change model observed from Community Pharmacist Independent Prescribers' (CPIPs) working in patient facing roles in Primary Care evaluation

Conclusion

This report shows that the pilot successfully evidences the assertion 'CPIPs can play a positive role in general practice and have a positive impact at all levels - on patients, practices and the NHS'. This evaluation has outlined the ways in which the scheme was operationalised and highlighted the positive outcomes on multiple levels. Data has been provided from all key stakeholder perspectives to understand, explain and underpin the key findings.

Of the six CPIP innovators who took on the pilot role, one had to leave the scheme part-way for personal reasons and another returned to their original post at the end of the scheme. **Four of the six pharmacists were offered continuing employment in their primary care role by their practice site**. This is a clear indication that during the one year scheme the CPIPs successfully proved their value to the practice hosts who chose to employ them directly.

Patients showed overwhelming positive support for the role and their reactions demonstrate the concept of a CPIP in primary care is a valid useful role. **Patients now actively seek out the CPIP** as an alternative to the GP.

> *"I didn't bother to make the appointment with (GP), when I rang I said I will make it with [CPIP]. I knew straight away she would be able to do it."* *(Patient 1006 Data 1111 Patient Focus Group)*

Patients demonstrated that their familiarity with the new role was creating differentiation in the primary care skills mix, benefitting their experience and access to primary care.

> *"I feel that [CPIP2] has enabled me not to have to go to the GP. If there is any problem with my medication I go to [CPIP2] I don't go to the GPs. "(Patient 1001 Data 1111 Patient Focus Group)*

The theory of change model outlined above and derived from the learning in this pilot scheme can be used in moving forward with implementation schemes for Pharmacists working in General Practice.

All key stakeholders reported very positive experiences from the pilot scheme. Much credit should be given to the innovative clinicians, general practice and CCG staff whose drive, commitment and enthusiasm was witnessed throughout the project and was clearly linked to its successful outcome.

The take home messages that follow summarise the key learning from this evaluation.

Take Home Messages

This report provides evidence to support the concept that - 'CPIPs can play a positive role in general practice and have a positive impact at all levels - on patients, practices and the NHS'.

Implementation

- Successful partnerships can be made between GPs and Pharmacists with no existing relationships
- Where existing relationships exist between a practice and CPIP the work can develop faster than where no relationship exists
- Recruitment – there may not be the ready supply of IP anticipated and further upskilling of Pharmacists to IP status may be beneficial to the overall development of the sector
- An induction period delivered locally is essential to building relationships, trust and development of the role
- An 8 day induction period (prior to patient facing work) provides a good quality introduction to the new work context, creates a sense of belonging and trust and forms a solid base for mentoring and role development
- An induction to general practice should include (as a minimum) the opportunity to shadow a range of staff, learn and practise working with the IT system(s), and build mentoring relationships
- Mentoring is a significant initial time investment for GPs with benefits realised later on during the first year
- Successful mentoring utilises a reducing scaffold model, often as per registrar training

Capacity

- Medication reviews were conducted by CPIPs from day 1 releasing capacity from GPs
- CPIPs visits to care homes and domiciliary environments represent a significant release of practice capacity
- Prescription queries, both from patients and other staff, quickly become the responsibility of the CPIP improving capacity for other staff
- Chronic disease management can be delivered by CPIPs including medication reviews and adherence and condition monitoring
- CPIPs can be actively directed to follow the strategic direction of local practice needs in terms of condition management and prescribing
- CPIPs positively contribute to discharge management and provide a strong link between primary and secondary care and the domiciliary or care home environment(s)
- CPIPs can manage acute care consultations and provide a useful back up to others offering these appointments, especially as demand fluctuates
- Patients recognise the benefits on primary care capacity and are happy to have ease of access to a clinician

Quality

- CPIPs were able to personalise appointment lengths according to the needs of the patients; on the whole CPIP appointments were twice as long as GP appointments or greater
- CPIPs provide holistic care by considering the person as a whole system of conditions, medicines and personal circumstances
- CPIPs provide invaluable medicines education and usage advice to patients
- CPIPs medication advice to patients leads to increased medication adherence which has potential for positive health and cost saving benefits
- CPIPs use skills in motivational interviewing to give advice about and monitor lifestyle changes which can have positive health an cost saving benefits
- Patients are very satisfied with the expert medication knowledge and skills of the CPIP which has been proven to rectify problems others have not been able to
- CPIPs can have positive impact on patient safety through their unique knowledge of medications
- CPIPS work on medication understanding, adherence and safety can prevent patients' readmission to secondary care which can save money for the NHS

Uniquity

- CPIPs bring unique expert knowledge to the primary care skills mix
- Patients benefit from holistic care which can lead to increased patient satisfaction
- CPIPs actively deprescribe and practise cost effective prescribing which has cost saving benefits for the NHS
- CPIPs can act as a strategic tool to drive NHS or local health aims and objectives
- CPIPs are able to conduct reviews and make interventions based on their expertise in medicines which may prevent hospital admissions
- Patients recognise the unique benefits of the CPIP role and act as ambassadors of the role

This report supports the concept that '**CPIPs can play a positive role in general practice and have a positive impact at all levels - on patients, practices and the NHS'.**

Acknowledgements

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Appendices

Appendix A

The proposed formative evaluation addresses a number of key developmental questions that will assist the future roll out of the initiative:

1. What is the underlying theory or model of change on which the initiative is developed, what forms of evidence or experience have been influential and how can a refined model of change be used to inform future measurement and summative evaluation?
2. How does the initiative move from concept to specification to practice, with particular attention to the influence of key decision-makers, patient co-design and local service leaders?
3. How are CPs integrated into local GP practice arrangements, with particular attention to the local contextual factors, e.g. resource profiles, occupation and organisational boundaries; leadership, service cultures, established ways of working, IT and other technological capabilities?
4. How is the service organised and delivered in the different pilot sites as a 'situated' intervention, with particular attention to the local changes in practice and the influence of wider contextual factors, as detailed in question 3?
5. How do different stakeholders perceive and experience this new service configuration, including GPs, CP, patient and family members, practice managers, practice support staff and other community based healthcare professionals?
6. What evidence can be found, primarily qualitative, but also from routine service data, that the pilot has brought about change in the management and delivery of primary healthcare, with particular attention to the developed model of change including assessments of GP workload and time management, patient access, and health benefits?
7. What type and number of consultations are the pharmacists conducting and what are the routes of consultation initiation and disposal? Are these consultations in addition to GP workload or a replacement for (patient reported)?

Evaluation has included observations of Pharmacist led consultations with patients, and interviews with practice staff, and the programme board team. Focus groups have also taken place between the evaluation team and patients attending services.

The University of Nottingham will also be involved in evaluating the NHS England Clinical Pharmacist programme pilot and second wave implementation.

Appendix B

DATA RECORD

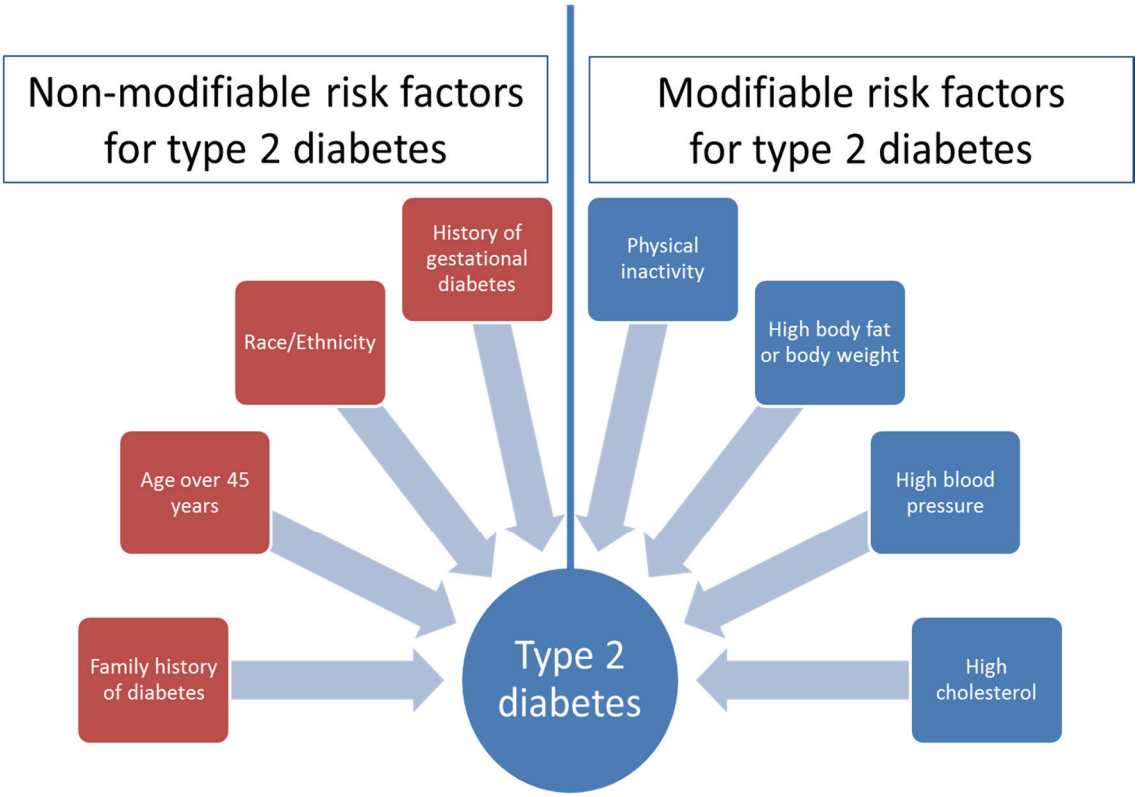
No	Filename and description	Type	Who / Which site	Date
1.	4101 Initial site visit	Fieldnote	4000	01/10/15
1b.	7001 Stakeholder meeting ethnographic fieldnotes	Fieldnote	7000	23/10/15
2.	8101 Commissioner meeting	Meeting notes	Commissioners / All	28/01/16
3.	8102 Commissioner teleconference	Meeting notes	Commissioners / All	02/02/16
4.	1101 Initial site visit	Fieldnote	1000	03/02/2016
4b.	8103 Commissioner meeting	Meeting notes	Commissioners / All	03/02/2016
5.	1102 Initial Observation	Fieldnote	1000 CP	11/02/2016
6.	1103 CP Interview	Interview data	1000 CP	11/02/2016
7.	1104 PM Interview	Interview data	1000 PM	11/02/2016
8.	1105 GP Interview	Interview data	1000 GP	11/02/2016
9.	7101 Stakeholder meeting	Observational meeting notes	Stakeholders / All	12/02/2016
10.	7102 Stakeholder slides	Presentation notes	Stakeholders / All	12/02/2016
11.	7103 Stakeholder delegate feedback	Delegate feedback	Stakeholders / All	12/02/2016
12.	3101 Initial site visit	Meeting note	3000	26/02/2016
13.	2101 Initial site visit	Fieldnote	2000	01/03/2016
14.	8104 Commissioner interview	Interview data	Commissioners / All	02/03/2016
15.	2102 Initial observation	Fieldnote	2000	17/03/2016
16.	2103 CP Interview	Interview data	2000 CP	17/03/2016
17.	2104 PM Interview	Interview data	2000 PM	17/03/2016
18.	2105 GP Interview	Interview data	1000 GP	17/03/2016
19.	3102 Initial observation	Fieldnotes	3000 All	18/3/16
20.	3103 CP Interview	Interview data	3000 CP	18/3/16
21.	9101 Clinical skills training observation	Fieldnotes	9000 All	22/3/16

22.	7104 Reflective fieldnote on difficulties contacting practices	Fieldnotes	7000 All	31/3/16
23.	9102 Clinical skills training obs	Fieldnotes	9000 all	13/4/16
24.	1106 Follow up initial observation	Fiednotes	1000 PM	27/4/16
25.	1107 Nurse interview 1	Interview data	1000 NS	27/4/16
26.	1108 Nurse interview 2	Interview data	1000 NS	27/4/16
27.	8105 Teleconference with Gerald	Meeting notes	8000 All	28/4/16
28.	9103 Clinical skills training obs	Fieldnotes (paper)	9000 All	6/5/16
29.	9104 Clinical skills OSCE obs	Fieldnotes (paper)	9000 All	16/5/16
29b.	9105 Combined training delegate feedback	Delegate feedback (paper)	9000 All	17/5/16
30.	9106 Clinical Skills training provider interview	Interview data	9000 All	16/5/16
31.	9107 Training feedback report	Written report	9000 All	25/5/16
32.	7105 Update from Gerald via Matt	Meeting notes	7000 All	18/5/16
33.	3104 CP Observation in care home	Fieldnotes	3000 CP	19/5/16
34.	7106 Monthly report to commissioners	Written report	9000 All	31/5/16
35.	5101 Initial site visit	Fieldnotes	5000 All	6/6/16
36.	7102 Commissioner Interview (Sam)	Interiew	7000	17/6/16
37.	5102 First observations of Pharmacist	Observations	5000	23/6/16
38.	5103 GP Interview	Interview data	5000	23/6/16
39.	5104 PM Interview	Interview data	5000	23/6/16
40.	5105 CP Interview	Interview data	5000	23/6/16
41.	3105 PM Interview Abbey	Interview data	3000	24/6/16
42.	3106 Nurse Interview Abbey	Interview data	3000	24/6/16
43.	3107 Commissioner Interview (Richard Wells)	Interview data	3000	12/07/16
44.	6101 Initial observation	Observations	6000	14/7/16
45.	6102 Patient feedback	Written report	6000	14/7/16
46.	6103 CP Interview	Interview	6000	14/7/16

47.	6104 Nurse Interview	Interview	6000	14/7/16
48.	6105 PM Interview	Interview	6000	14/7/16
49.	4102 Observation	Observation	4000	20/7/16
50.	4103 CP Interview	Interview	4000	20/7/16
51.	1109 observations	Observations	1000	14/9/16
52.	1110 CP interview	Interview		14/9/16
53.	6106 Second clinical observations	Observation	6000	16/9/16
54.	6107 CP Second interview	Interview	6000	16/9/16
55.	4104 Interview PD			1/12/16
56.	4105 Interview GP			1/12/16
57.	3108 Interview GP	Interview	3000	7/1/16
58.	7103 Clinical ommissioner interview	Interview	7000	24/1/16
59.	3109 CP Second interview	Interview	3000	8/2/16
60.	6109 CP final interview and obs	Interview	6000	10/2/16
61.	5106 CP Interview	Interview	5000	5/5/16
62.	5107 CP later obs	Observation	5000	5/5/16
63.	5108 CP Support info	Paper	5000	5/5/16
64.	1111 Focus groups	Interview	1000	
65.	3108 Focus Groups	Interview	3000	
66.	4106 Focus groups	Interview	4000	
67.	5108 Focus Groups	Interview	5000	
68.	6110 Focus Groups	Interview	6000	
69.	Reflection on patient data	Fieldnotes	All	
70.	Final closure report	Written report	All	

Appendix C

Information sheet: Modifiable and Non-modifiable risks of T2DM



Information sheets: Weight Management Information Leaflet

Weight management Advice

The science of slimming

1. Don't miss meals
   Have 3 meals a day so that you don't snack in between on junk food

2. Count calories 1300 – 1500 per day

3. Mushy/Soupy food makes you fill full up for longer because of slower gastric emptying time

4. Protein in diet also makes you feel fuller for longer

5. Add vegetables and salads to the diet – minerals and fibre – makes you feel fuller for longer

6. Milk – slows the gastric emptying rate

7. Water or juices dilute the food and empty the stomach quickly making you feel hungry sooner

8. Smaller plate – we try to eat all that is on our plates. Care: More appetising the food, the more we eat.

9. Exercise – continues to burn energy over 24 hours to replace the carbohydrates from fats. Government recommends - 5 x half hour moderately active exercise per week.

10. Do work moving around to burn up energy

Waist Sizes

What is your body shape?

Most people are apple-shaped or pear-shaped. This means that when you put on weight, the fat is either stored around your hips (pear-shaped) or around your middle (apple-shaped).

If you're overweight and apple-shaped, you have a higher risk of health problems than if you're pear-shaped.

Waist size and risk of health problems

You have a **higher risk of health problems including T2DM** if your waist size is:

- more than **94cm** (37 inches) if you're a white or a black man
- more than **87.5cm** (35 inches) for Asian man
- more than **80cm** (31.5 inches) if you're a woman

Your risk of health problems is **even higher if your waist size is:**

- more than **102cm** (40 inches) if you're a man
- more than **88cm** (34.5 inches) if you're a woman

The research, which is to be published in the journal PLoS Medicine, was based on the EU-funded InterAct study, in which 12,403 people developed Type 2 diabetes over a 15-year follow-up period.

The researchers found that **7 per cent of men and 4.4 per cent of women** who were **overweight (with a BMI between 25 and 29.9kg/m2) and had a large waist went on to develop diabetes within 10 years.**

This contrasts with those people with **normal body weight and a smaller waist circumference, with only 1.2 per cent of men and 0.6 per cent of women** developing the condition over the same time period.

Patient Commitment to living Longer Healthier and Happier Sign up

Commitment to Living Longer, Healthier and Happier

Patient Name:

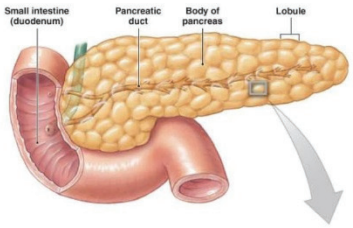
I am going to:	Stepping stone - 1	Stepping stone - 2	Target
Diet: **Reg small meals. Do not miss meals out. Balance food** **Coffee - no more than 5 a day** **Take you meds regularly**			
Stop smoking			
Exercise: 5 x 30 mins a week.			
Coffee - reduce to 5 x a day			
Encouraged to re-book the endoscopy and colonoscopy and if any issues let the surgery know so that we can resent another letter.			

I am focused and determined to get there ……

Information Sheets: Health Education - Obesity Diabetes and Cardiovascular Disease

After Food

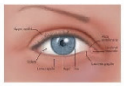
Simplified Schematic Health Education for mechanisms of damage for Diabetes, Obesity and Cardiovascular

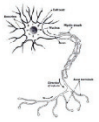


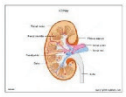
Insulin Released by The Pancreas

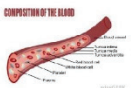
We are evolved not to waste hard earned energy.

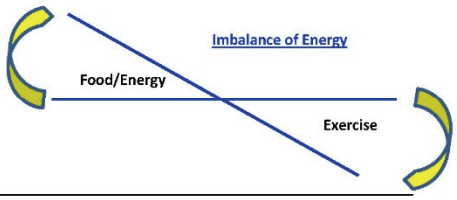
After food, Pancreas releases insulin which tells cells to use the energy up now and store away the rest as Glycogen or Cholesterol for another day when food is not available.





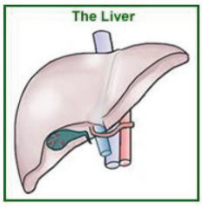






Unused energy Stored efficiently as Cholesterol or Glycogen

Processed by the liver

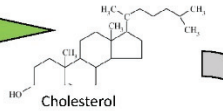


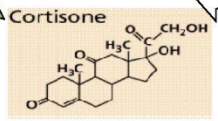
Traffic redirected to steroids

Production when Xs Cholesterol

resulting in Xs Steroids

Reduced Utilisation by the cells causes a

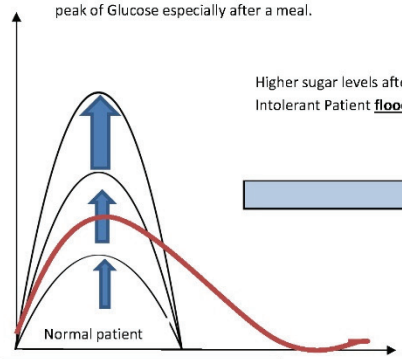




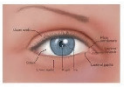
Excess energy overloads the Cholesterol Pathway forcing excess Cortisone (Steroid) production.

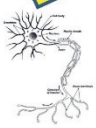
Excess Cortisone production blocks the actions of the Insulin on the cells

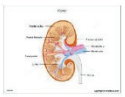
Cells stop listening to the insulin causing higher blood glucose levels.

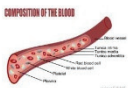


Higher sugar levels after a meal in a Glucose Intolerant Patient **floods** these cells particularly.









Up to 80% Microvascular damage done straight after a high sugary meal

Results in Eyes, Nerve and Kidney problems **3.5 to 5 years** before symptoms of Diabetes are seen.

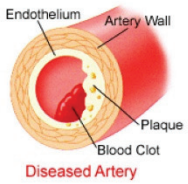
High glucose levels damage

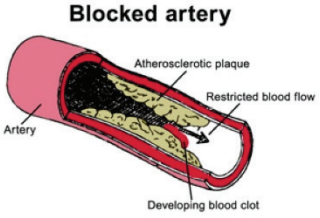
Plus

High Blood Pressure

Plus

High Cholesterol levels





Blocks Blood vessels and risks Heart Attack and stroke

WELLSPRING SURGERY, ST ANNS VALLEY CENTRE, 2 LIVINGSTONE ROAD, ST ANNS, NOTTINGHAM NG3 3GG