Economic analysis of Dudley Quality Outcomes for Health

Final Report

13 March 2018

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in association with

The Strategy Unit

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Contents

Foreword

In response to the well-known challenges facing health and social care services, Dudley Clinical Commissioning Group (CCG) and its partners have set out to transform the local model of care. At heart, this involves a shift in both the locus of care (more care closer to people's homes) and the mode of provision (including increased self-management). This is being developed through the establishment of a Multi-speciality Community Provider (MCP).

Multiple strands of work have been initiated to bring this transformation about. One of the most important has been a change in the way that primary care services are commissioned by the CCG. This change - replacing the national Quality Outcomes Framework (QOF) with the new 'Dudley Quality Outcomes for Health' (locally known as the Long Term Conditions Framework (LTCF)) - had several aims.

In broad terms, these aims were to increase efficiency, while improving experience and outcomes for people with LTCs. Again speaking broadly, these aims were expected to result from 'technical' changes (e.g. to system templates and outcome indicators used to determine payments), alongside 'cultural' changes (e.g. encouragement of greater use of care planning and patient-led goal setting).

The significance of these changes, allied to Dudley's place in the national 'New Care Models' programme, spurred the decision to evaluate implementation and effects of the LTCF. This evaluation was conducted by ICF, the Strategy Unit and the University of Birmingham; it was organised into two phases:

- Phase 1 focused on the early implementation of the LTCF, highlighting ways in which its operation could be improved. The report from this work can be found here; and
- Phase 2, which is set out in this report, then examined the service economics of the LTCF.

In approaching the service economics of the LTCF, the study addressed two main questions:

1: How has the introduction of the LTCF affected resource use for: GP practices, patients and – by extension – the local economy?

The headline finding here is that it seems to depend upon a number of factors, including the extent to which care pathways have been changed to support the delivery of LTCF. In essence: larger practices may have greater scope to change pathways (e.g. more multi-condition clinics) and the skill mix associated with their delivery (e.g. less GP, more nursing and healthcare assistant input); they are therefore better placed to deliver the LTCF efficiently.

2: If the 'cultural' changes to the mode of care encouraged by the LTCF (e.g. increased patient self-management) were enacted, then what might be the effect on resource use across the whole Dudley care economy?

The nature of the question is somewhat speculative; so too is the analytical response. Nonetheless, a simple modelling exercise based upon a review of published evidence suggests that there are gains to be had. The changes promoted by the LTCF are associated with more appropriate resource use (e.g. reductions in unplanned use of secondary care) and improvements in patients' quality of life.

What then does this overall programme of evaluation suggest should be done?

Firstly, and most strongly, it suggests that the mode of care encouraged by the LTCF is the right one. It suggests that the cultural changes – based around greater patient involvement in their care – merit further encouragement and support. Changes in the relationship between

(LTC) patient and clinician provide a foundation for wider transformations to the local model of care. But these changes are not easy (for clinician or patient) and need to be proactively supported by the CCG.

Secondly, it suggests that there are detailed aspects of LTCF delivery that can be improved. One significant change here seems to be that, relative to QOF, the LTCF requires tighter management of hypertension. The implications of this for practices (greater cost?) and patients (better outcomes?) warrant further investigation.

Thirdly, it suggests that smaller practices are unlikely to have the flexibility to realise the potential efficiencies of the LTCF. Indeed, the analysis presented in this report suggests that they may have increased their inputs to achieve the desired outcomes. The response to this is not obvious, but – from the CCG's perspective – it may involve encouraging greater collaboration between practices and more sharing of staff. Another approach could be to consider ways in which administrative support could be pooled or centralised to strengthen the infrastructure to aid delivery. These responses could be backed with the provision of good practice / case study examples showing how local practices have successfully implemented changes.

Fourthly, it suggests that there are gains to be had at the level of the whole system. If Dudley's MCP changes the way that people with LTCs are managed, then the whole system (and the patient) gains. One implication here would be that system investments could be changed to support this (investing more in MCP services to reduce activity in secondary care). This could be backed by contractual changes based on risk-gain share between the secondary care and MCP elements of Dudley's system. Much more sophisticated modelling than that presented in this report would be required to underpin this; much more certainty would also be needed as to whether the desired changes in primary care are being made; more certainty still would be required as to whether the effects recorded in the literature are being realised in Dudley. Nonetheless, the evidence assembled here suggests that this could further support the ambitions of Dudley's new model of care.

Fraser Battye, Strategy Unit

Kelly Singh, ICF

1 Background to the evaluation

In 2016, Dudley CCG commissioned an evaluation of the development of its new Multi-specialty Community Provider (MCP) care model from a partnership of the Strategy Unit (hosted by Midlands and Lancashire CSU), ICF and the Health Services Management Centre (University of Birmingham). The overall approach to the evaluation is described in the Early Findings report[1] produced by the Strategy Unit but, in summary, the evaluation operates at both a system and service specific level.

Within this overall evaluation, the partnership was commissioned by the CCG to undertake an independent evaluation of the Dudley Quality Outcomes for Health, locally known as the Long-Term Conditions Framework (LTCF).

As part of its vision for transforming primary care, the CCG devised the LTCF as a revision to the Quality Outcomes Framework (QOF). The final report from that evaluation was submitted to the CCG in February 2017 with a focus on learning and recommendations for the ongoing implementation of the framework (a summary of findings from this report is provided in Section 1.2).

This is a follow up to that evaluation focusing on the resource and economic implications of LTCF, including a review of the impact on the health service of improving the management of long-term health conditions.

1.1 National and local context

In 2014, NHS England published the Five Year Forward View (FYFV), describing a series of challenges facing health and social care services. The FYFV also set out potential responses to these challenges. The most prominent of these focused on developing new models of care that are sustainable over the longer term and meet the changing needs of patients as well as the growing challenges of the NHS. The creation of the 'New Care Models' programme, which was established through 50 local 'Vanguard' sites, is a way of providing areas with the opportunity to explore new models of providing health care services in local communities.

One of the care models described in the FYFV was the MCP model. This is the model Dudley CCG has established - working alongside a range of partners in the health, social care and the voluntary sector. The MCP model seeks to enhance and integrate the range of services provided in community settings, recognising the importance of primary care and general practice. A preferred bidder for the MCP new care model contract has recently been revealed as a consortium of four NHS trusts and 38 local GP practices.[2]

Some existing services are being developed and enhanced to fit the CCG's vision for transforming care locally within the new care model, the introduction of the LTCF, developed as a revision to QOF, is part of this.

[1] http://www.strategyunitwm.nhs.uk/sites/default/files/2018-02/Evaluation%20of%20the%20Dudley%20New%20Care%20Model%20Programme%20-%20Early%20Findings%20Report%20-%20Sept%202016.pdf

[2] http://www.dudleyccg.nhs.uk/a-step-closer-to-dudley-multispecialty-community-provider-mcp/

1.1.1 Quality Outcomes Framework (QOF)

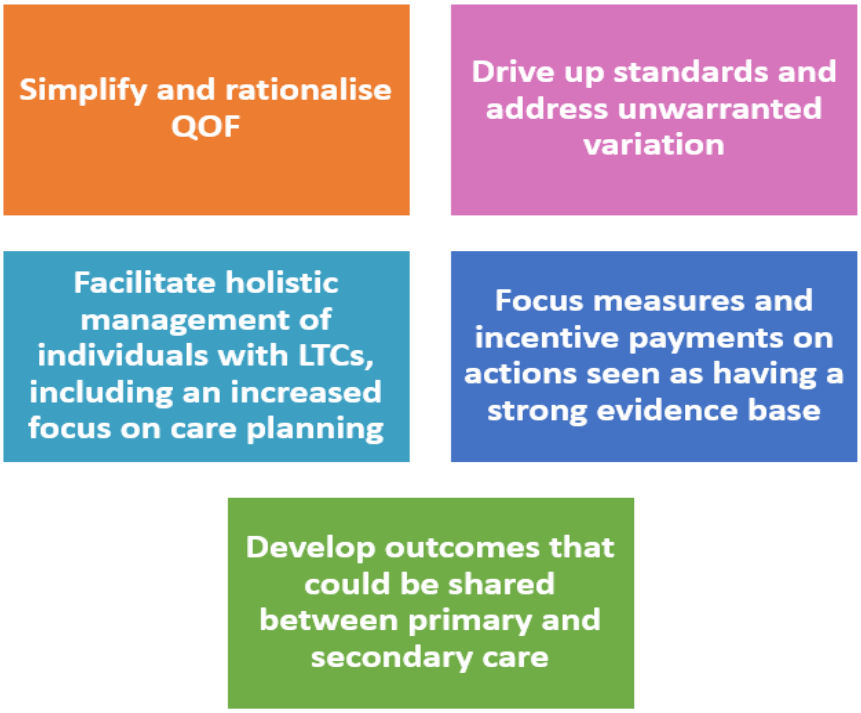
QOF was introduced in April 2004 as part of the new General Medical Services (GMS) contract for general practices. QOF is a performance management and payment system for GPs and was part of a revised contract intended to standardise and improve the quality of care in general practice.

Under QOF, practices are rewarded for providing patients with good quality care through the awarding of points linked to achievements against specific indicators. QOF indicators change annually but a focus is maintained on key areas including the management of prevalent long term conditions (LTCs) and encouraging preventative health behaviours.

1.1.2 Dudley Long Term Conditions Framework

As part of its vision for transforming primary care as an MCP vanguard site, Dudley CCG developed a new contractual framework for primary medical services to replace QOF. The rationale being that QOF was no longer fulfilling its function of incentivising a focus on quality within general practice. In addition, it was felt that QOF created administrative and measurement requirements that could be simplified in order to create efficiencies.

Figure 1.1 Aims of the framework



The development of the new framework involved multiple professional inputs with advice taken from GPs, nurses, pharmacists, public health professionals, and commissioners. It has also been shared with member practices and sent for comment to external experts. By the time it went live, the framework had been revised over 40 times and was reflective of local priorities and national evidence.

The CCG intended the LTCF to drive a more holistic and integrated approach to the management of LTCs, with practices expected to offer patients a single 'holistic review' for all their LTCs, where this is feasible (for some patients who have several / complex conditions, for example, more than one appointment may still be needed).

In addition, the CCG expected that collaborative care planning would become a key aspect of the holistic review for patients – with all patients with LTCs expected to have a care plan, to be reviewed at least once a year. The aim was to promote self-management, with clinicians working with patients to define goals that matter to them and strategies for reaching those goals. To facilitate implementation and uptake of the new framework and holistic review process, new EMIS templates[3] were developed and introduced within practices bringing together the multiple reporting systems under QOF into a single template, including a template care plan.

The framework consists of 62 indicators, reducing and consolidating existing QOF indicators and those related to Local Incentive Schemes (LIS) and Directed Enhanced Services (DES). All investments previously allocated as part of the LIS and DES schemes have also been redirected into the LTCF.

In 2016/17 practice payments were not linked to the framework with practices receiving block payments based on historic QOF scores. In 2017/18, practices receive 50% block payment, with the other 50% linked to the achievement of the specific indicators below:

- **50% of practice payments will be linked to six indicators from the previous QOF system (relating to blood pressure, atrial fibrillation, diabetes, asthma and COPD)**
- **ACC1-9: Access standards**
- **G1: Completion of holistic assessments**
  G3: Completion of care plans
- **LD1: Completion of holistic assessments for patients with learning difficulties**
- **Audits: completion of relevant audits including an audit of the end of life/palliative care register, an audit of appointment availability,**

The payment mechanism will be fully implemented in 2018/19 as all LTCF indicators go 'live'.

1.2 Description of the evaluation

As noted above, the previous evaluation of the LTCF focused on learning for ongoing implementation of the framework. Headline findings were that:

- Staff in primary care praised the CCG for its collaborative approach to developing the framework; they also raised a number of additional and ongoing training needs to make the changes used to implement LTCF. One need identified was around how to change recall processes and run searches to identify patients with multiple LTCs to undertake a single holistic review.
- There was a high degree of variation in performance on both outcomes and use of the EMIS template alongside differences in the changes made to support practical implementation. Some practices had retained existing clinic structures; others had made changes to their organisation of appointments – e.g. increasing appointment times for LTC reviews and having two step appointments using different healthcare professionals (HCPs).

[3] EMIS is the system used by practices to record and share information to deliver care. The templates have been incorporated into this system.

- Partly as a function of this variation in practice – and partly as a function of the Framework being new – views were mixed as to whether the LTCF was more or less efficient than QOF;
- Wide variation in care planning practices was also observed. Some consultations were collaborative and enabling for patients, others were largely 'template-driven';
- Early reported outcomes included: upskilling of practice staff; a stronger focus on care planning and supporting self-management; moves towards a more holistic model of care; and more joint working across the primary/secondary care interface.

Following this work, in mid-2017, it was agreed that ICF would undertake a pathway mapping exercise to further explore practice level care pathways for patients with LTCs, 'pre' and 'post' the introduction of the LTCF in order to deepen the understanding of the changes made at a practice level. The work was also designed to add to the evidence base around the potential resource implications associated with the introduction of new care pathways under LTCF.

1.2.1 Aims of the evaluation

The research has three overall aims:

- To map 'pre' and 'post' care pathways in order to illustrate how LTC care is organised and delivered at a practice level, which staff are involved, and how long different care processes take. The 'pre' care pathway refers to the care pathway delivered under the Quality and Outcomes Framework (QOF).
- Based on the above, to assess the economic impact of introducing holistic reviews (as part of the LTCF) for a defined patient population;
- To explore the potential impact of the new care pathways on the self-management of patients and subsequent wider impacts across the local care economy.

The overall study therefore fulfils both evaluative and developmental purposes:

- At a local level, the process of mapping the 'pre-' and 'post-' holistic review pathways is useful in itself for practices, both to confirm how holistic reviews/care planning is being delivered and to highlight where efficiencies or improvements could be made. The analysis could also contribute to wider learning between practices and across the CCG; and
- The research examining the wider economic impact of changes to the LTC pathways will provide insight into the potential resource impact for Dudley and also support wider understanding of the possible impacts of such changes (within / outside of the MCP); this will also be of value to the national agenda.

The research was conducted in two parts – at practice and wider system level. This is reflected in how the rest of the report is structured:

- **Part A** maps changes in care pathways at a practice level, exploring the potential, associated resource implications at three case study practices.
- **Part B** presents findings from an evidence review to explore the potential impact of new care pathways on the self-management of patients and provides an illustration of the subsequent wider health service impacts.

Part A: Pathway mapping: Three illustrative case study examples

1 Introduction to Part A

This Part of the report presents a description of how care pathways for LTCs have been changed under the new framework in Dudley before providing an estimation of the economic effect on GP practices of implementing the new care pathways.

1.1 Method

The evaluation explored practice level pathways. These are complex in nature and so a multi-method approach, combining quantitative and qualitative methods, was chosen.

Qualitative information about the QOF and LTCF care pathways was collected by conducting case study visits with three GP practices: AW Surgeries, Northway Surgery and Clement Road Surgery. Practices were selected in conjunction with the CCG to provide a mix in terms of engagement with LTCF and implementation, patient population and their location within Dudley. Annex 1 presents the locations of the three case study practices.

Three primary LTCs were selected as part of the work due to their prevalence in the local patient population: hypertension, diabetes and chronic obstructive pulmonary disease (COPD). All of the analysis focusses on these three conditions.

The case study visits included interviews with practice managers and healthcare staff. Interviews were guided by a template covering:

- A detailed description of the care pathways before and after the introduction of LTCF, including:
  - Appointments for follow up, including healthcare professionals (HCPs) responsible for the appointment, location, duration of appointment, frequency of the appointment;
  - Any other stages in the care pathway (for example blood testing);
- The number of patients supported by the old and new care pathways (if known).

The qualitative data collected from the case study interviews was then analysed and used to produce detailed descriptions of the resource and timing implications associated with the old and new care pathways.

The final stage of the work involved supplementing practice level information around the time and resource used to deliver care under QOF and LTCF with cost data from national sources (e.g. NHS reference costs, national tariff data (NHS England) and The Unit Costs of Health and Social Care (Personal Social Services Research Unit)). This was to provide high level insights into the potential economic implications associated with QOF and LTCF.

1.1.1 Limitations

Several limitations follow from the method:

- The findings presented in this report do not cover any changes or improvements in the quality of care or experience of patients and solely present a general overview of pathways of care experienced. One example of this is the changes in management of hypertension – the changes in quality of care or management of this condition is not reflected in the findings, solely the resource used to deliver the care.

- One aim of introducing LTCF was to reduce and consolidate the QOF indicators to simplify the care of people with LTCs. The potential reduction in administrative burden and wider impact of changes in targets is not reflected in this work as it focuses solely on the care pathways for patients with three LTCs.
- The findings and analysis presented in this report draw upon a number of different sources including local practice level interviews and national level cost data. The costings and potential economic impact presented in this report are therefore indicative: it is not the intention to provide an accurate reflection of actual costs incurred by practices.
- Practices have taken different approaches to implementing LTCF and so vary in their progress to date. Additionally, the LTCF is still relatively new compared to QOF, which all practices had become familiar with.
- The pathways described in the report are detailed, but generic. In practice, timings vary for a number of reasons including the skills and experience of a HCP, timing constraints of other appointments on any given day, patient preference and the complexity of patient (co)morbidities.
- Over time, practices may make further changes to the way in which they deliver LTCF care, which could have subsequent effects on costs. For example, if LTCF is successful in its aims, patients should feel more confident and supported to self-manage. If this happens, we may see practices experimenting with shorter or less frequent appointments in subsequent years.

1.2 The structure of Part A

The remainder of Part A is structured in seven sections:

- Section 2 presents quantitative data on people in Dudley to provide a general context;
- Section 3 presents a case study assessment of the changes at AW Surgery;
- Section 4 presents a case study assessment of the changes at Northway Surgery;
- Section 5 presents a case study assessment of the changes at Clement Road Surgery;
- Section 6 describes the method used to estimate the economic effect of introducing the new care pathways;
- Section 7 presents high level examples of the potential cost implications of local changes in pathways using national level data; and
- Section 8 details the conclusions from this part of the research.

The report is completed with a number of Part A Annexes, which are as follows:

- Annex 1: Map locating practices involved in case study work
- Annex 2: Results of sensitivity analysis
- Annex 3: Data sources and values used in sensitivity analysis

2 LTCs in Dudley

As described in section 1.1, the CCG intended the LTCF to drive a more holistic and integrated approach to the management of LTCs. This section presents quantitative data pertaining to individuals in Dudley with LTCs alongside information related to the management of health to provide context for the analysis presented later on.

2.1 Management of LTCs in Dudley

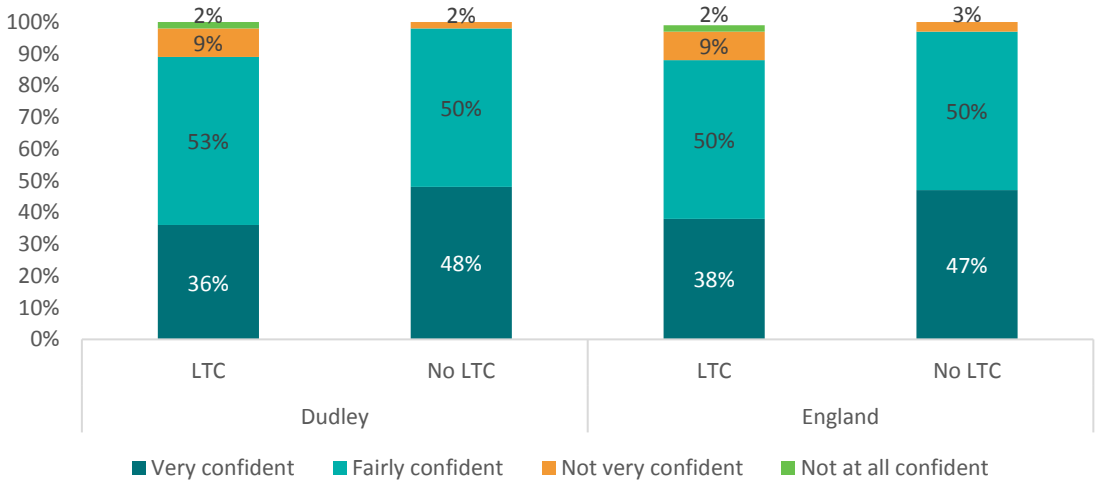
Over half (55%) of GP patients in Dudley reported having a LTC in 2017 (NHS England, 2017). This is similar to the average for England (54%). The most common types of LTC in Dudley were:

- High blood pressure (hypertension) – 20%;
- Arthritis or long-term joint problem – 16%;
- Asthma or long-term chest problem – 13%; and
- Diabetes – 7%.

The GP patient survey explores a patient's level of confidence in managing their own health, the state of patient's health and whether they have and use a written care plan.

Figure 2.1 presents the level of self-reported confidence among patients in managing their own health. Patients with LTCs are more likely to report low levels of confidence in managing their own health than patients without LTCs. Over 10% of patients with LTCs in Dudley are not confident in managing their own health.

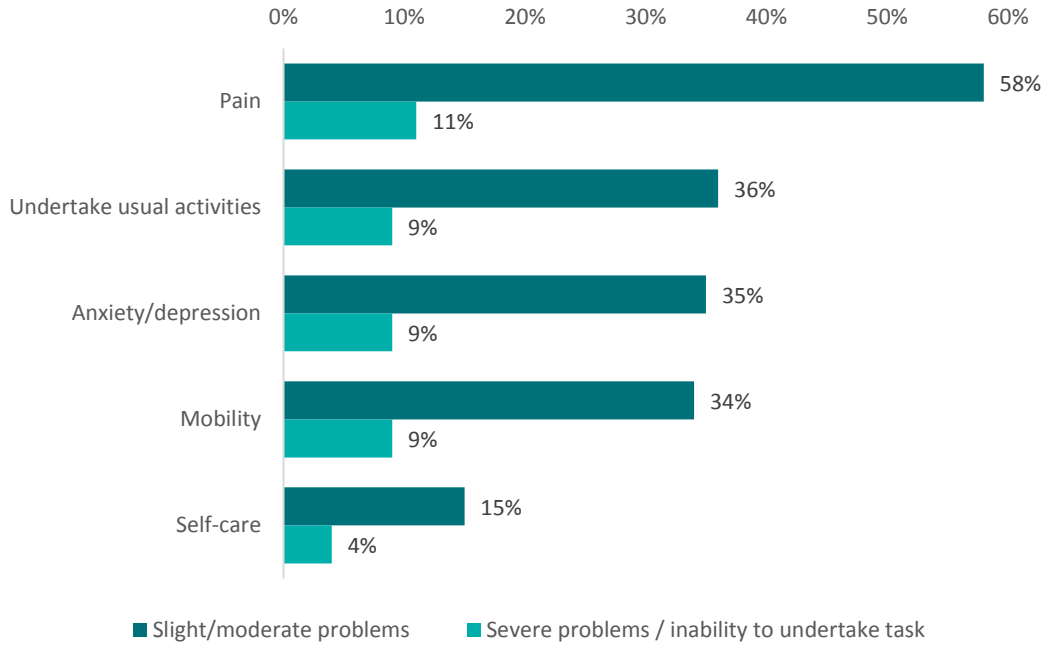
Figure 2.1 Self-reported confidence in managing own health among patients with LTCs and those without a LTC in Dudley and England



Source: NHS England (July 2017). GP Patient Survey: CCG report for Jan-Mar 2017

The GP patient survey also allows an analysis of the state of patients' health. In Dudley, over half of patients with a LTC have at least minor problems with pain and discomfort, which is the most common health problem reported by patients with LTCs (**Error! Reference source not found.**). Nearly half (45%) report problems undertaking their usual activities, 34% report anxiety or depression and 33% report problems with mobility. The proportion of patients reporting problems in these domains is much higher among patients with LTCs than in those without LTCs.

Figure 2.2 Self-reported health problems among patients in Dudley with a LTC.



Source: NHS England (July 2017). GP Patient Survey: CCG report for Jan-Mar 2017

A minority of patients with LTCs in Dudley have a written care plan (8%), however this is slightly higher than the average for England. Of the patients that have a written care plan, the majority use it to manage their health and review their care plan with a health professional. Patients in Dudley are more likely to use and review their care plan than the average patient in England (see **Error! Reference source not found.**).

Figure 2.3 Patients with LTCs in Dudley with a written care plan

	Dudley	England
Patients with LTC with have a written care plan	8%	6%
Patients with LTC and a care plan who use care plan	72%	67%
Patients with LTC and a care plan who review care plan with a health professional	69%	59%

Source: NHS England (July 2017). GP Patient Survey: CCG report for Jan-Mar 2017

This evidence shows that the proportion of patients with a LTC in Dudley is similar to the English average, as is the level of confidence among patients with a LTC in Dudley in managing their health. Patients with a LTC in Dudley are slightly more likely to have and use a written care plan.

The proportion of patients in England who have problems with pain, mobility, anxiety and undertaking their usual tasks is lower among those individuals with a LTC who are “very confident” in managing their health than those who are less confident in managing their health. The responses to these questions are correlated, although it is not possible to observe a causal relationship between confidence in managing health and health problems from this data.

2.2 Summary

The key findings from this section are:

- Patients with LTCs are less confident in managing their health than patients without a LTC – the level of confidence in managing health is similar in Dudley as England as a whole;
- Over half of patients in Dudley have a LTC, which is similar to the national average. This means there is potentially a large patient pool for whom changes in management of LTCs could be relevant;
- Patients in Dudley with a LTC are slightly more likely to have a care plan than the English average; however, this is still a very low percentage (8%). Therefore, there is considerable scope to increase the number of patients with a care plan, which is one of the changes in care promoted under LTCF;
- Data from the GP Patient survey suggest a positive correlation between confidence in managing health and whether a patient experiences problems with: pain, undertaking their usual activities, anxiety or depression, mobility and self-care.

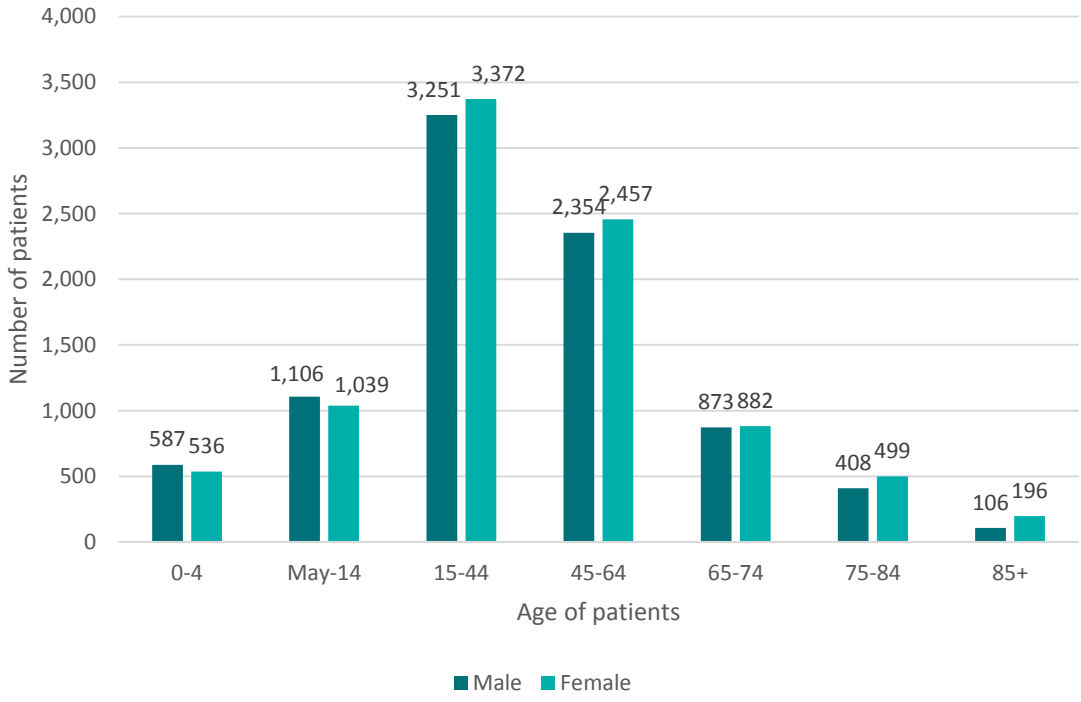
3 AW Surgeries

AW surgeries comprise two General Practice clinics situated less than a mile from one another in the Brierley Hill area of South Dudley. The practices are located in an area that is amongst the 20% most deprived neighbourhoods in the country.[4]

Unemployment in the Dudley South constituency is significantly higher than both the wider West Midlands region and national average with 7.3% of people unemployed compared with 5.4% in the region and 4.9% nationally. As of March 2017, 2,600 people were out of employment and actively looking for work[5].

The AW practices has 17,700 registered patients.[6] The gender and age composition of patients broadly mirrors the England average; with proportionally more males registered between the ages of 0 and 29 and more females in each age bracket following 50 (Figure 3.1).

Figure 3.1 AW surgeries patient demographic, by age and gender (Jan 2017)



NHS Digital; Numbers of Patients Registered at a GP Practice - January 2017

The practice has 41.6 full time equivalent (FTE) staff: 8.6 GPs, 4.7 practice nurses, 5.2 other health care professionals, and 23.1 administration staff.[7]

[4] Department for Communities and Local Government (2015). 'File 1: Index of Multiple Deprivation'. Available online: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015. Based on Lower Super Output area - ranked of 7,099 out of 32,844 areas on the Index of Multiple Deprivation.

[5] ONS annual population survey - Dudley South Parliamentary Constituency economic profile (March 2017)

[6] NHS England (2016). 'Practice Level and anonymised GP Level Census Data, Experimental statistics'. *General and Personal Medical Services, England.* Available online: http://www.content.digital.nhs.uk/catalogue/PUB23693

[7] Ibid

3.1.2 Health in the area

Table 3.1 shows the general health of residents in Brierley Hill, compared to residents in the wider local authority. It suggests few differences. However, when comparing Brierley Hill to the rest of England more pronounced differences emerge. For example, the percentage of people reporting having "very good health" in Brierley Hill is almost 8 percentage points lower than the English average.[8]

A similar proportion of people with LTCs in Brierley Hill reported being limited in their day-to-day actions compared to Dudley as a whole (21% limited "a lot" or "a little" in Brierley Hill, 20% in Dudley overall).[9].

Table 3.1 General health of residents in Brierley Hill, compared to Dudley and the rest of England

	Brierley Hill	Dudley	England
Very good health	39.9%	42.4%	47.2%
Good health	36.7%	35.8%	34.2%
Fair health	16.0%	15.3%	13.1%
Bad health	5.8%	5.1%	4.2%
Very bad health	1.6%	1.4%	1.2%
Total population	**13,935**	**312,925**	**53,012,456**

Approximately half of patients reported having a long-standing health condition.[10] The most commonly named LTCs were high blood pressure (21%) and arthritis or long-term joint problem (20%).

3.2 Prevalence of LTCs

The number of patients with diabetes, COPD, hypertension and combinations of these are presented in Table 3.2:

Table 3.2 Conditions to be analysed and the number of patients with the conditions at AW Surgeries[11]

Condition	Number of patients LTCF	Number of patients QOF
Combination of diabetes and COPD	64	
Combination of diabetes and hypertension	670	
Combination of COPD and hypertension	177	
Combination of diabetes, COPD and hypertension	46	
Diabetes only	232	
COPD only	142	

[8] Dudley Metropolitan Borough Council. (n.d.). *'2011 Census Area Profiler'.* Available in an Excel format from: http://www.dudley.gov.uk/community/census/2011-census/

[9] *Ibid.*

[10] NHS England (July 2017). GP Patient Survey: Practice Report for Jan-Mar 2017.

[11] The total number of patients in each column do not sum to the same total. This is because patients with combinations of diseases are double counted in the QOF column (patients are counted separately for each condition they have)

Condition	Number of patients LTCF	Number of patients QOF
Hypertension only	1,187	
Total with diabetes		1,012
Total with COPD		365
Total with hypertension		2,080

Data provided by AW Surgeries

3.3 Care pathways

The care pathway for each condition under QOF and the LTCF are presented in Figure 3.2 and Figure 3.3. This presents the duration of each action and the staff member responsible per patient. The care pathways for both frameworks are similar:

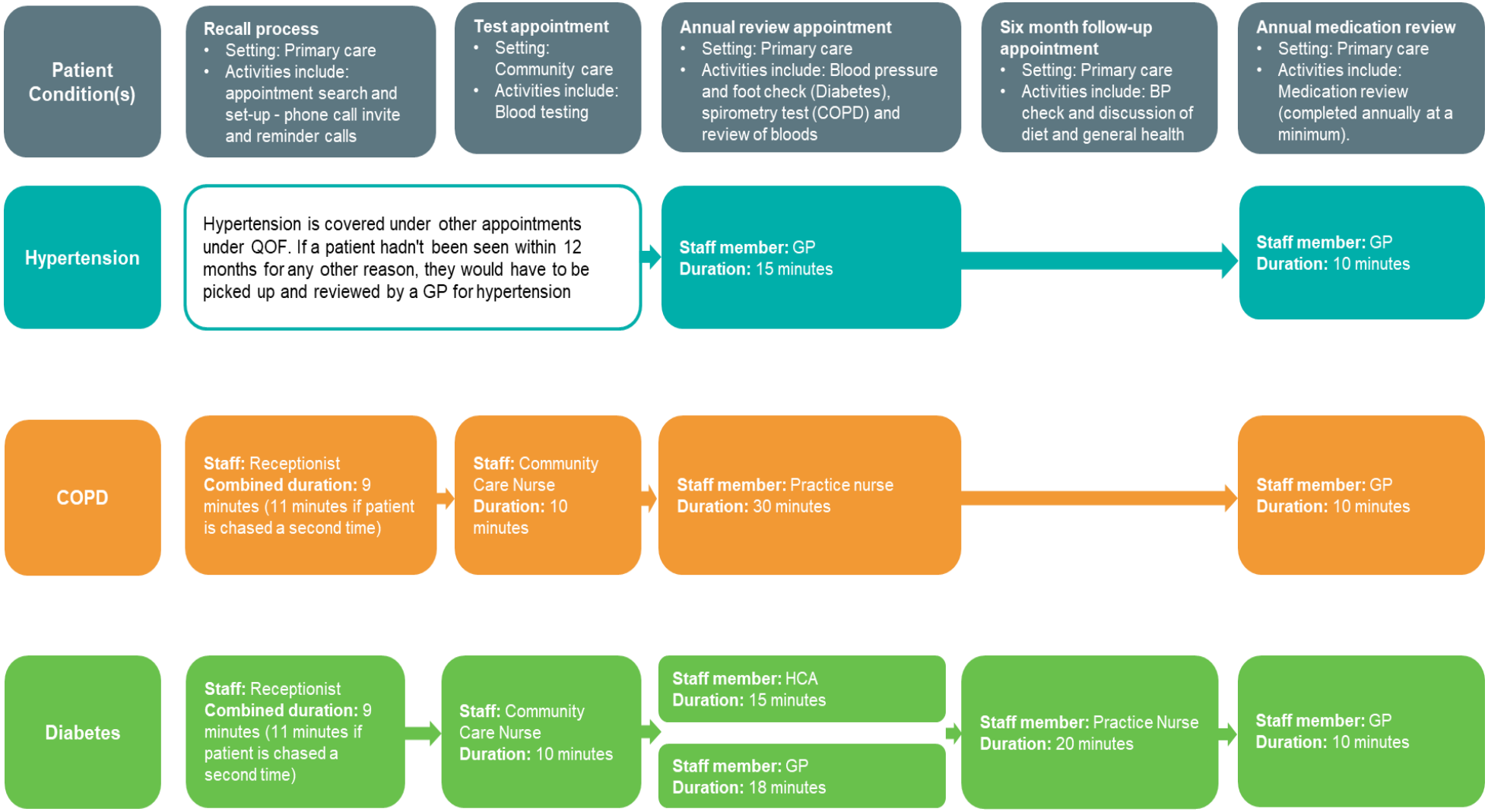
- Patients are called to the practice for their appointment;
- For some conditions patients are required to go for a blood test, (diabetes, COPD and combinations of conditions);
- There is an annual review appointment, where patients have tests and an assessment of their LTC;
- Patients with diabetes (and a combination of LTCs in the LTCF care pathway) are required to have a six month follow up appointment to monitor their LTC; and
- All patients have an annual medical review with their GP. The patient does not have to attend the GP practice for this – although it is assumed for the purposes of this analysis that half of patients do attend an appointment at the practice.

The main differences between the care pathways are the duration of the actions. The recall process, annual review appointment and six monthly follow-up are all *individually* longer under the LTCF framework than under QOF. Additionally, under QOF patients with hypertension were monitored opportunistically, rather than having a set appointment. It has been estimated that 25% of patients with hypertension received an annual monitoring appointment.

A further difference is that individuals with multiple conditions will use the “Combined conditions” care pathway under the LTCF. Under QOF, they would have to attend the care pathway for each of their conditions individually, meaning they would have attended a higher number of appointments, impacting on patient time.

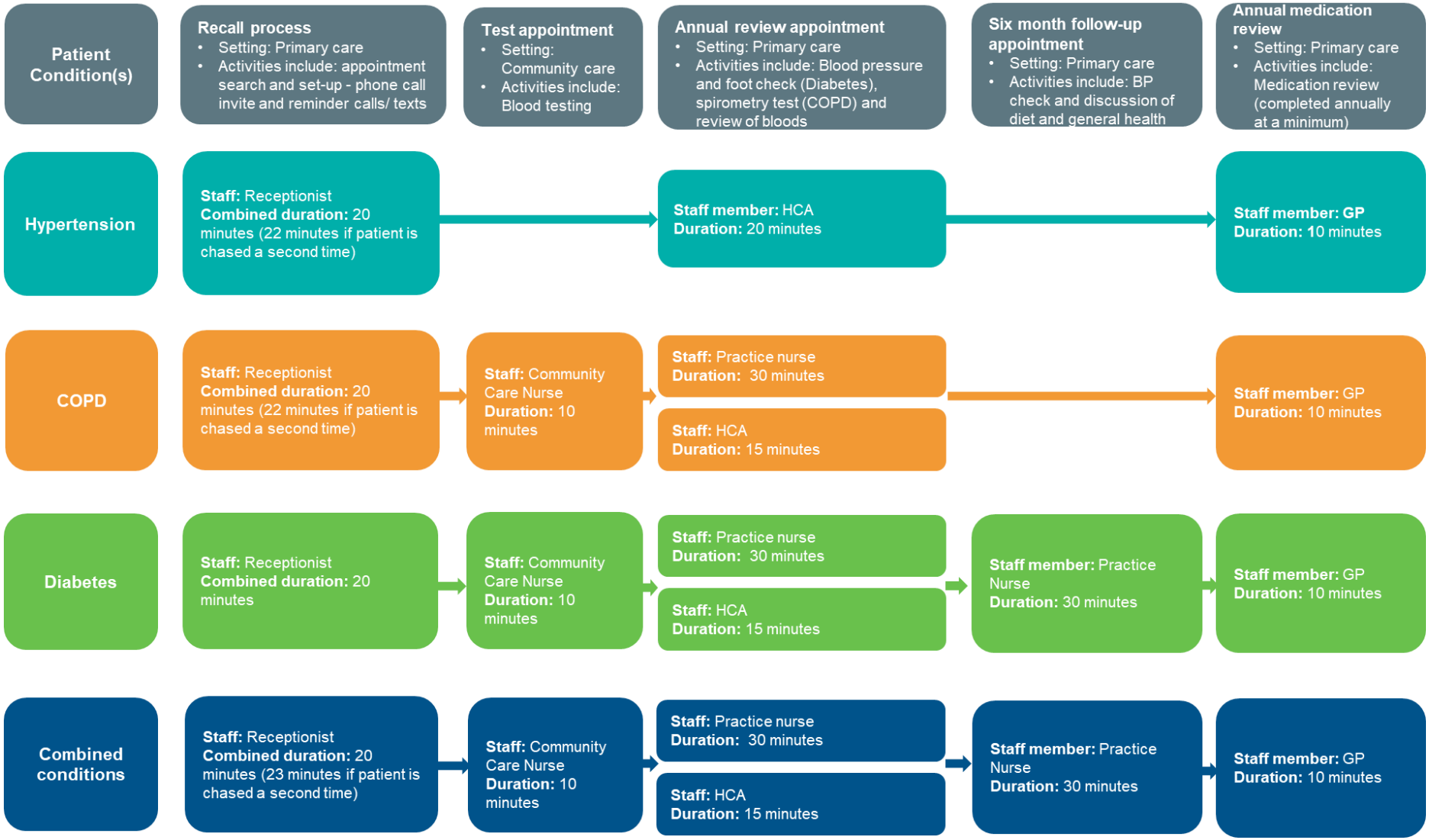
A final difference between the care pathways is that in addition to the actions presented below, in the LTCF care pathways a GP will review a list of patients at the start of each day. This did not take place under the QOF care pathways.

Figure 3.2 QOF care pathway



HCA – Healthcare assistant

Figure 3.3 LTCF care pathway



3.4 Conclusion

The main findings from the analysis are:

- AW Surgeries have significantly redesigned their care pathways for patients with LTCs. Patients with single conditions have an annual review, which is longer in duration than under the QOF framework (45 minutes under LTCF compared to 20 to 35 minutes under QOF, depending on the condition). However for patients with multiple conditions there is a time saving through streamlining of appointments and a reduction in trips to the practice. For example, for a patient with diabetes and COPD, the total duration of *annual review* appointments under QOF could take over one hour compared with 45 minutes under LTCF[12].
- The practice has changed skill mix, with fewer hours of GP time, and more hours of healthcare assistant, practice nurse and administration time spent in delivery of LTCF compared to QOF.
- More patients with hypertension receive monitoring and support for their condition under the LTCF care pathways than the QOF care pathways (2,080 under LCF compared to 520 under QOF). This is because under the LTCF hypertension is more actively monitored, whereas under QOF it was monitored opportunistically, with an estimated 25% of patients seen per year.

[12] Excluding follow up, six monthly reviews

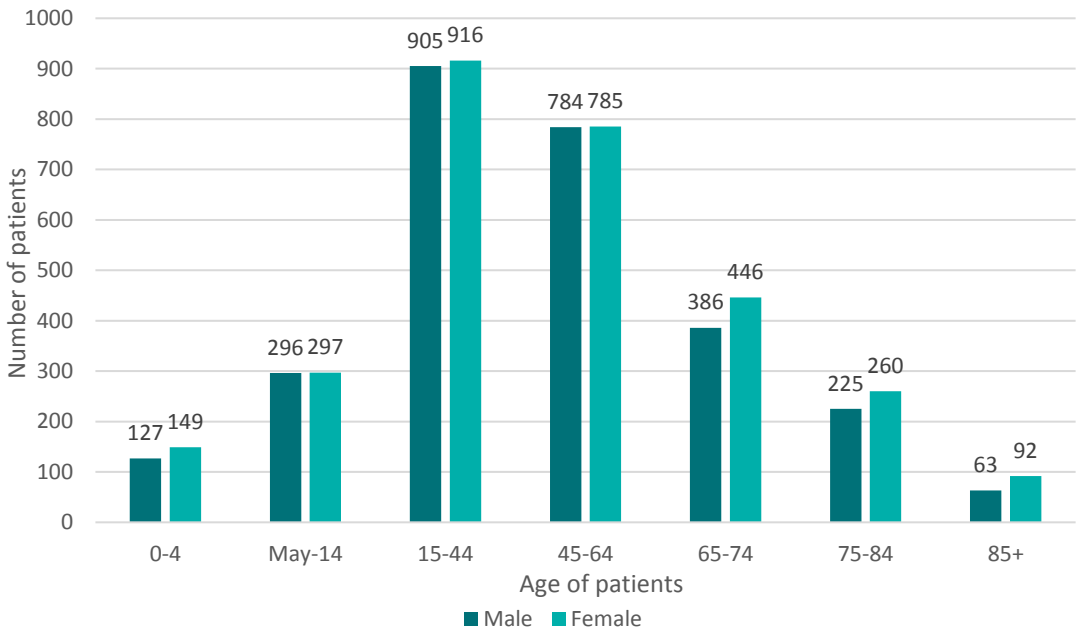
4 Northway Surgery

Northway Medical Centre is one of the nine general practices serving the 55,500 patients in the Sedgley, Coseley and Gornal locality in the Dudley North parliamentary constituency.[13] The practice is located in a neighbourhood in the top 15% least deprived neighbourhoods in England.

In Dudley North 32,300 individuals aged 16-64 are economically active (67% of the total 16-64 population), with 28,700 (59%) employed. 3,600 are unemployed. The percentage of individuals who are economically active and employed in Dudley North is lower than the English average (78% of individuals economically active and 74% employed).[14] In 2011, 4.2% of residents were economically inactive due to long-term sickness or disability, which was lower than the national average of 4.6%.[15]

The medical centre has 5,700 registered patients.[16] Figure 4.1 shows that there are similar numbers of male and female patients registered at the practice (51% female patients; 49% male). The largest proportion of patients (32%) are aged between 15 and 44 years old.

Figure 4.1 Northway Surgery patient demographic, by age and gender (Jan 2017)



NHS Digital; Numbers of Patients Registered at a GP Practice - January 2017

The practice has 14 FTE staff : 3.3 GPs, 1.0 practice nurse and 2.4 other healthcare professionals and 7.3 administrative staff.[17]

[13] Data correct as of 1st April 2016 and obtained from: All Together Better (n.d.). 'Sedgley, Coseley and Gornal'. *Surgeries by Locality.* Available online: http://www.atbdudley.org/local-area/sedgley-coseley-and-gornal

[14] Annual Population Survey (2016) – Statistics for Dudley North

[15] NOMIS (2011). Ward Labour Market Profile E36006840: Sedgley. Available online: https://www.nomisweb.co.uk/reports/lmp/ward2011/1140857528/report.aspx

[16] NHS England (2016). 'Practice Level and anonymised GP Level Census Data, Experimental statistics'. *General and Personal Medical Services, England.* Available online: http://www.content.digital.nhs.uk/catalogue/PUB23693

[17] Ibid

4.1.2 Health in the area

Table 4.1 shows the general health of residents in Sedgley compared to residents in Dudley local authority and England. It suggests small differences in the general health of Sedgley residents and the Dudley average. There are bigger differences when comparing the health of Sedgley to the rest of England. The percentage of people reporting having "very good health" in Sedgley is 6 percentage points lower than the English average.[18]

A similar proportion of residents in Sedgley and the whole of Dudley with LTCs reported being limited in their day-to-day actions (21% limited "a lot" or "a little" in Sedgley, 20% in Dudley overall).[19]

Table 4.1 General health of residents in Sedgley, compared to Dudley and the rest of England

	Sedgley	Dudley	England
Very good health	41.2%	42.4%	47.2%
Good health	36.5%	35.8%	34.2%
Fair health	16.6%	15.3%	13.1%
Bad health	4.4%	5.1%	4.2%
Very bad health	1.3%	1.4%	1.2%
Total population	**12,087**	**312,925**	**53,012,456**

2011 Census Area Profiler

Approximately half of patients reported having a long-standing health condition.[20] The most commonly named LTCs were high blood pressure (22%) and arthritis or long-term joint problem (18%).

4.2 Prevalence of LTCs

The number of patients with diabetes, COPD, hypertension and combinations of these at Northway Surgery are presented in Table 4.2:

Table 4.2 Conditions to be analysed and the number of patients with the conditions at Northway Surgery[21]

Condition	Number of patients LTCF	Number of patients QOF
Combination of diabetes and COPD	8	
Combination of diabetes and hypertension	215	
Combination of COPD and hypertension	47	
Combination of diabetes, COPD and hypertension	12	
Diabetes only	100	
COPD only	49	

[18] Dudley Metropolitan Borough Council. (n.d.). *'2011 Census Area Profiler'*. Available in an Excel format from: http://www.dudley.gov.uk/community/census/2011-census/

[19] *Ibid.*

[20] NHS England (July 2017). GP Patient Survey: Practice Report for Jan-Mar 2017.

[21] The total number of patients in each column do not sum to the same total. This is because patients with combinations of diseases are double counted in the QOF column (patients are counted separately for each condition they have).

Condition	Number of patients LTCF	Number of patients QOF
Hypertension only	914	
Total with diabetes		335
Total with COPD		116
Total with hypertension		1,188

Data provided by Northway Surgery

4.3 Care pathways

The care pathway for each condition under QOF and the LTCF are presented in Figure 4.2 and Figure 4.3. This presents the duration of each action and the staff member responsible per patient. The care pathways for both frameworks are similar:

- Patients are called to the practice for their appointment;
- For some conditions patients are required to go for a blood test, (diabetes and combinations of conditions);
- There is an annual review appointment, where patients have tests and an assessment of their LTC;
- Patients with diabetes (and a combination of LTCs in the LTCF care pathway) are required to have a six month follow up appointment, to monitor their LTC; and
- All patients have an annual medical review with their GP. The patient does not have to attend the GP practice for this – although it is assumed that half of patients do attend an appointment at the practice for this.

The main differences between the care pathways are the duration of the actions. The recall process is longer under the LTCF framework than under QOF. Additionally, under QOF patients with hypertension were monitored opportunistically, rather than having a set appointment. It has been estimated that 60% of patients with hypertension received an annual monitoring appointment.

A further difference is that individuals with multiple conditions will use the “Combined conditions” care pathways under the LTCF. Under QOF, they would have to attend the care pathway for each of their conditions individually, meaning they would have attended a higher number of appointments, impacting on patient time.

A final difference between the care pathways is that in addition to the actions presented below, in the LTCF care pathways a receptionist will spend four hours per month (48 hours per year) reviewing a list of patients with LTCs, to establish who requires an appointment, which member of staff is required for the appointment and liaising with the staff member about the appropriate action to take. This did not take place under the QOF care pathways.

Figure 4.2 QOF care pathway

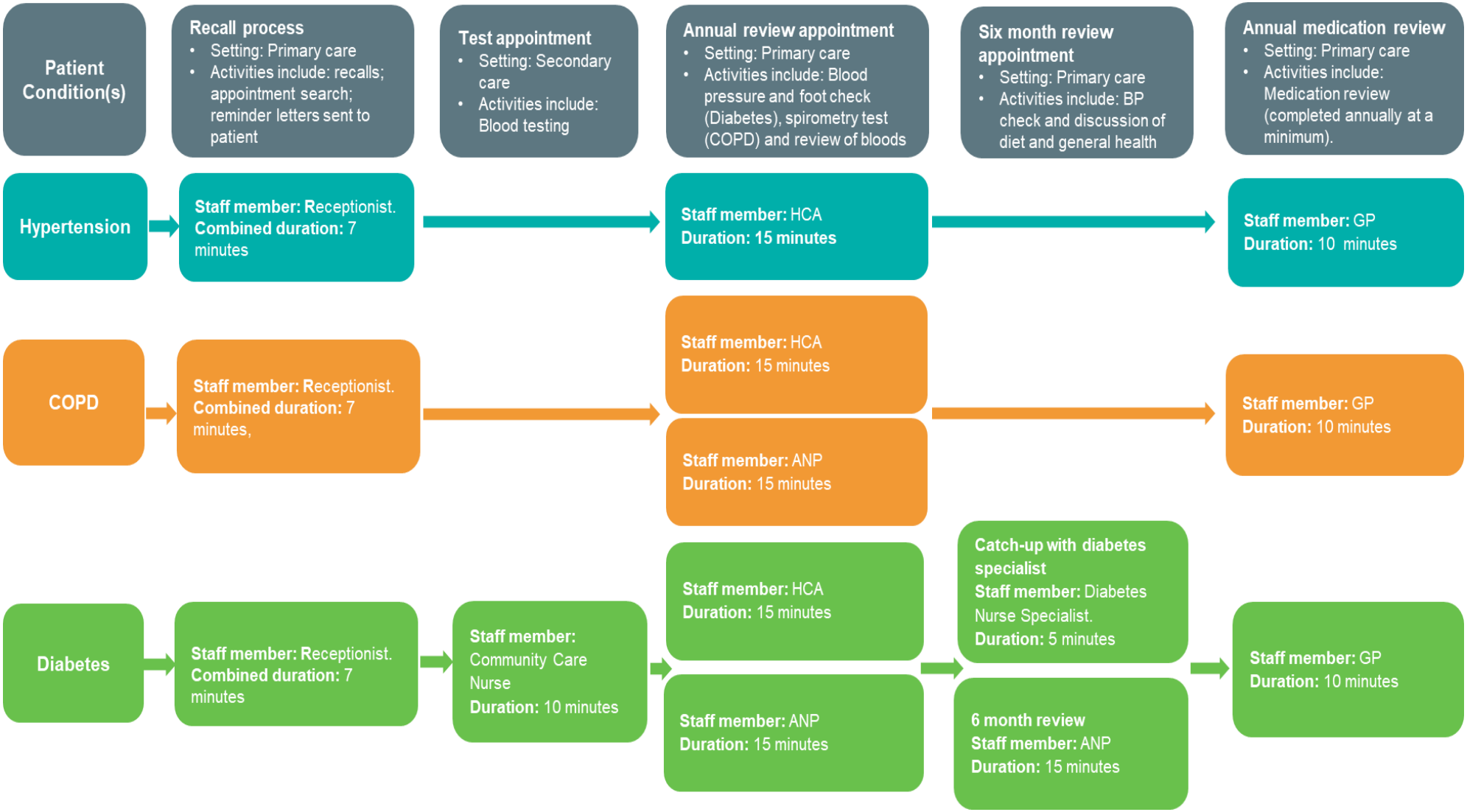
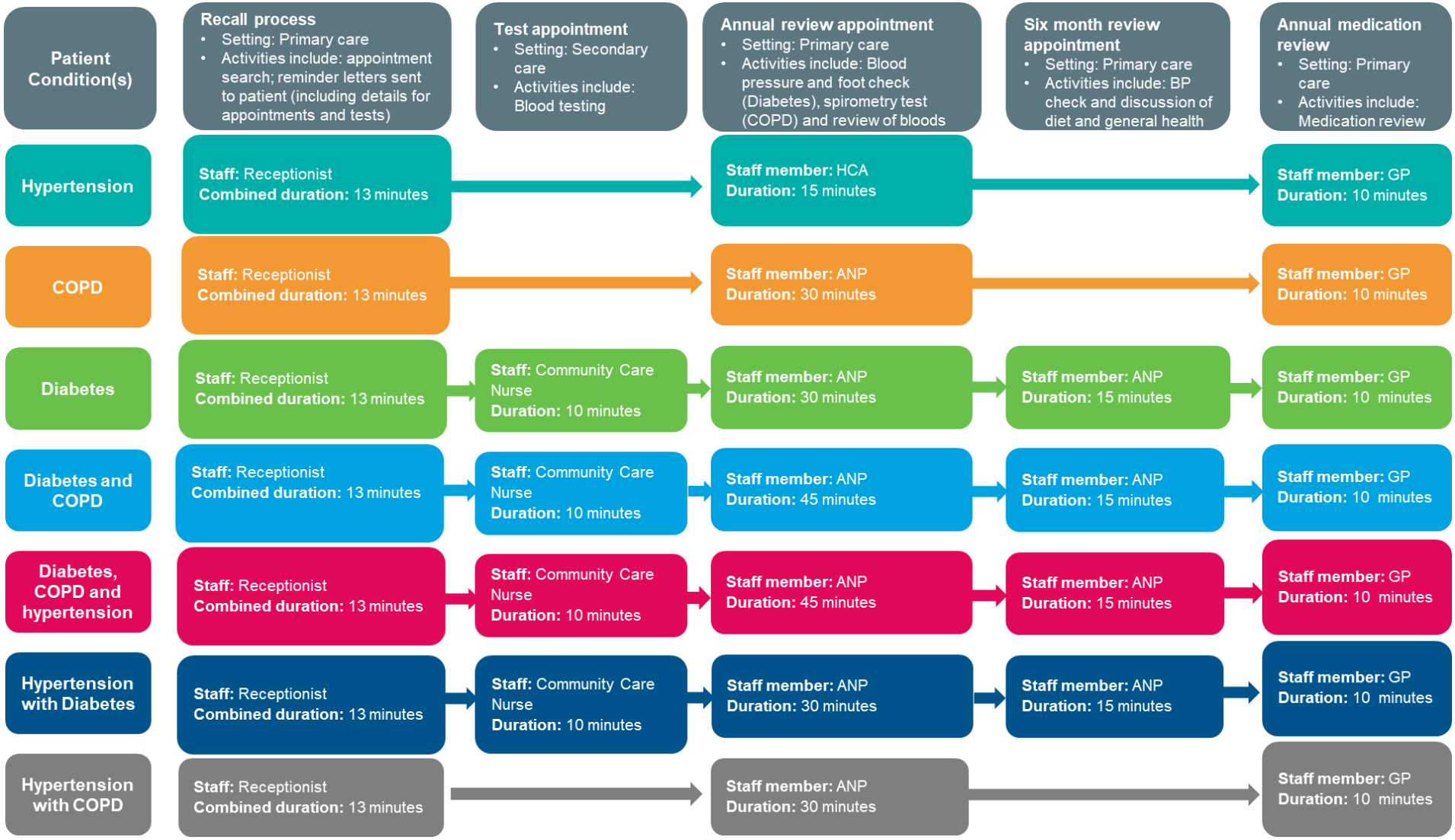


Figure 4.3 LTCF care pathway



4.4 Conclusion

The main findings from the analysis are:

- Northway Surgery have slightly altered the care pathways for patients with single conditions, altering the staff member who the patient sees for their appointment (now the whole appointment is with an Advanced Nurse Practitioner, whereas under QOF half of the appointment was with a Healthcare Assistant).
- For patients with hypertension and diabetes[22] combined and hypertension and COPD, the combined *annual review* appointment is shorter than the total duration of appointments they received under QOF; maximum duration of 30 minutes compared to up to 45 minutes (including hypertension separately) under QOF. The whole appointment is now with an Advanced Nurse Practitioner (rather than half being with a Healthcare Assistant).
- A patient with diabetes, COPD and hypertension or diabetes and COPD combined have a shorter *annual review* appointment than under QOF; 45 minutes is the maximum duration for LTCF compared with up to 1h 15 under QOF.[23]
- More patients with hypertension receive monitoring and support for their condition under the LTCF care pathways than the QOF care pathways (1,188 under LCF compared to 713 under QOF). This is because under the LTCF hypertension is more actively monitored, whereas under QOF it was monitored opportunistically, with an estimated 60% of patients seen per year.

[22] Excluding follow up, six monthly reviews

[23] Excluding follow up, six monthly reviews

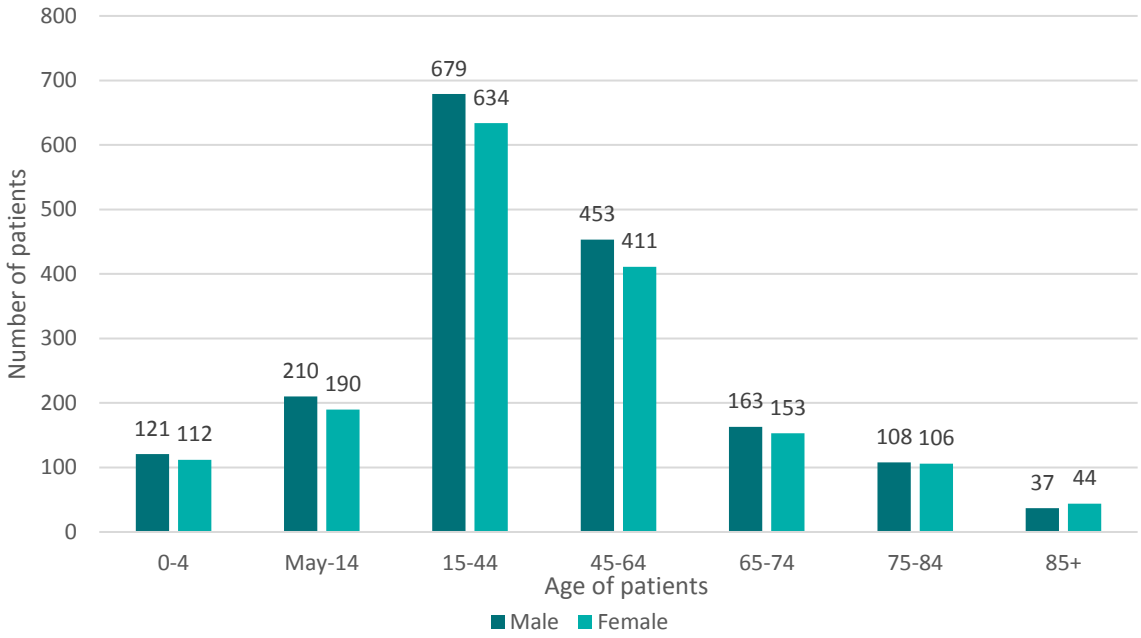
5 Clement Road Surgery

Clement Road Medical Centre is one of the ten general practices serving the 540,300 patients in the Halesowen and Quarry Bank locality in Halesowen and Rowley Regis parliamentary constituency.[24] The practice is located in an area that is amongst the 30% most deprived neighbourhoods in the country.[25]

In Halesowen and Rowley Regis 39,700 individuals aged 16-64 are economically active (77% of the total 16-64 population), with 38,600 (75%) employed. 1,100 are unemployed. The percentage of individuals who are economically active and employed in Halesowen and Rowley Regis is similar to the English average (78% of individuals economically active and 74% employed).[26]

The GP practice has 3,400 registered patients.[27] As illustrated in Figure 5.1, there are a similar number of male and female registered patients (52% male, 48% female), and the largest proportion of patients (39%) are aged between 15 and 44. This aligns to the population characteristics of the wider ward.[28]

Figure 5.1 Clement Road patient demographic, by age and gender (Jan 2017)



NHS Digital; Numbers of Patients Registered at a GP Practice - January 2017

[24] Data correct as of 1st April 2016 and obtained from: All Together Better (n.d.). 'Halesowen and Quarry Bank'. *Surgeries by Locality.* Available online: http://www.atbdudley.org/local-area/halesowen-and-quarry-bank

[25] Department for Communities and Local Government (2015). 'File 1: Index of Multiple Deprivation'. Available online: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015. Based on Lower Super Output area - ranked of 7,099 out of 32,844 areas on the Index of Multiple Deprivation.

[26] Annual Population Survey (2016) – Statistics for Dudley North

[27] NHS England (2016)

[28] Office for National Statistics (2012). '*2011 Census: Population and Household Estimates for Small Areas in England and Wales'.*

The practice has 7.1 FTE staff: 1.8 GPs, 0.9 practice nurses and 4.4 administrative staff.[29]

5.1.2 Health in the area

Table 5.1 shows the general health of residents in Halesowen North, compared to residents in the wider local authority. It suggests minimal differences in the general health of Halesowen North residents compared to Dudley overall. On the other hand, there are bigger differences when comparing the health of Halesowen North to the rest of England. For example, the percentage of people reporting having "very good health" in Halesowen North is 6 percentage points lower than the English average.[30]

A similar proportion of residents in Halesowen North and the whole of Dudley with LTCs reported being limited in their day-to-day actions (19% limited "a lot" or "a little" in Halesowen North, 20% in Dudley overall).[31]

Table 5.1 General health of residents in Halesowen North, compared to Dudley and the rest of England

	Halesowen North	Dudley	England
Very good health	41.7%	42.4%	47.2%
Good health	37.1%	35.8%	34.2%
Fair health	15.0%	15.3%	13.1%
Bad health	4.9%	5.1%	4.2%
Very bad health	1.3%	1.4%	1.2%
Total population	**12,173**	**312,925**	**53,012,456**

2011 Census Area Profiler

Just over half of patients at Clement Road Surgery reported a long-standing health condition (52%)[32]. The most commonly reported condition was hypertension (high blood pressure – 29% of patients). Fewer patients reported having asthma or a long-term chest problem (14%) or diabetes (9%).

5.2 Prevalence of LTCs

The number of patients with diabetes, COPD and hypertension at Clement Road Surgery are presented in Table 5.2:

[29] NHS England (2016). 'Practice Level and anonymised GP Level Census Data, Experimental statistics'. *General and Personal Medical Services, England.* Available online: http://www.content.digital.nhs.uk/catalogue/PUB23693

[30] Dudley Metropolitan Borough Council. (n.d.). *'2011 Census Area Profiler'.* Available in an Excel format from: http://www.dudley.gov.uk/community/census/2011-census/

[31] *Ibid.*

[32] [32] NHS England (July 2017). GP Patient Survey: Practice Report for Jan-Mar 2017.

Table 5.2 Conditions to be analysed and the number of patients with the conditions at Clement Road Surgery[33]

Condition	Number of patients LTCF	Number of patients QOF
Total with diabetes	201	201
Total with COPD	68	68
Total with hypertension	609	609

Data from https://www.gpcontract.co.uk/browse/05C/16; Dudley CCG average prevalence applied to the number of patients registered to Clement Road Surgery

5.3 Care pathways

The care pathway for each condition under QOF and the LTCF are presented in Figure 5.2 and Figure 5.3. This presents the duration of each action and the staff member responsible per patient. The care pathways for both frameworks are similar:

- Patients are called to the practice for their appointment;
- For diabetes patients are required to go for a blood test;
- There is an annual review appointment, where patients have tests and an assessment of their LTC;
- Patients with diabetes are required to have a six month follow up appointment, to monitor their LTC; and
- All patients have an annual medical review with their GP. The patient does not have to attend the GP practice for this – although it is assumed that half of patients do attend an appointment at the practice for this.

There are minimal differences between the care pathways. The main difference is that patients with hypertension did not have an annual appointment to monitor their condition under QOF, whereas under the LTCF care pathway they do. All conditions are being monitored individually at the practice under both sets of care pathway. The main differences between the care pathways are the duration of the actions with a slight decrease in the duration of time spent calling patients to their appointment under the LTCF care pathways.

[33] The total number of patients in each column do not sum to the same total. This is because patients with combinations of diseases are double counted in the QOF column (patients are counted separately for each condition they have).

Figure 5.2 QOF care pathway

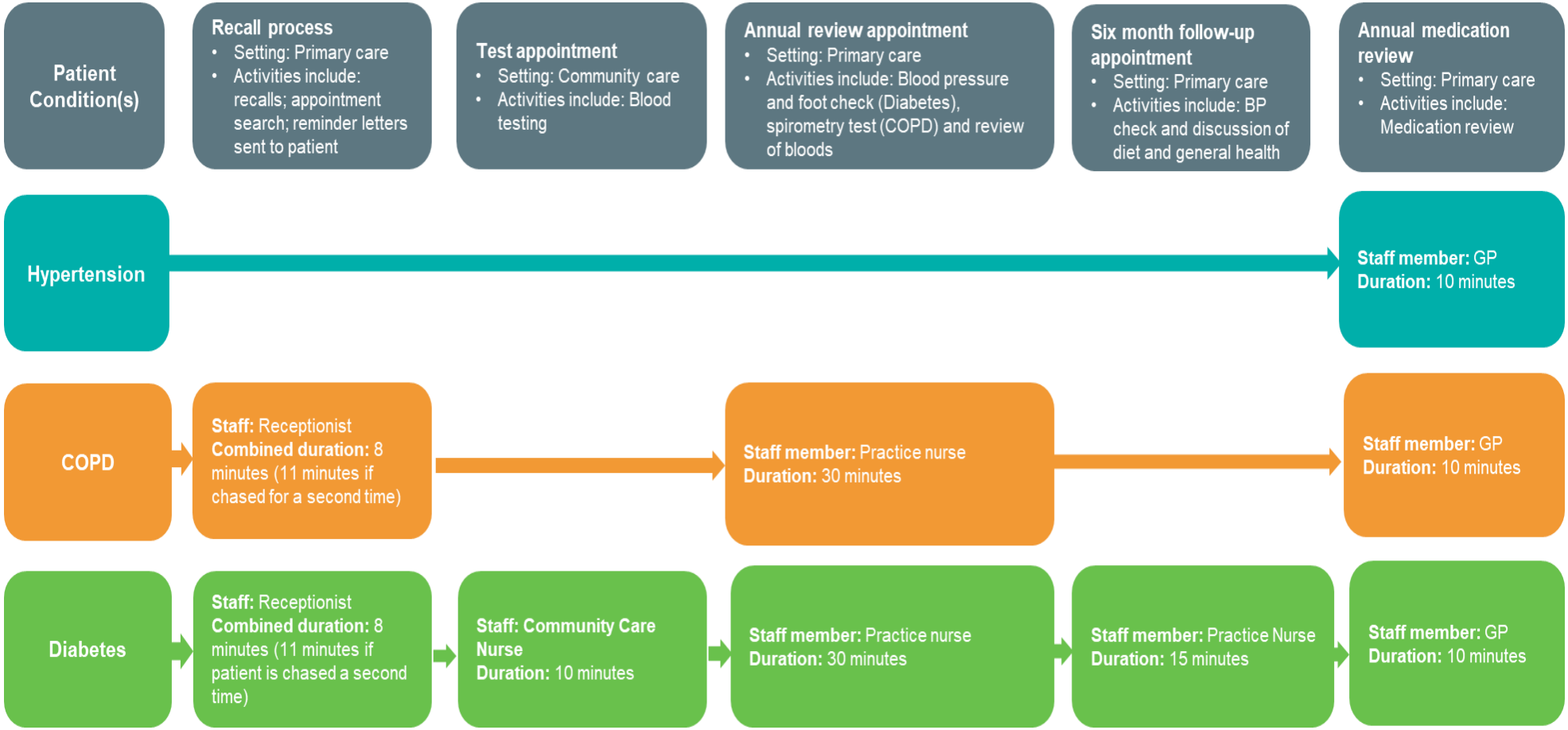
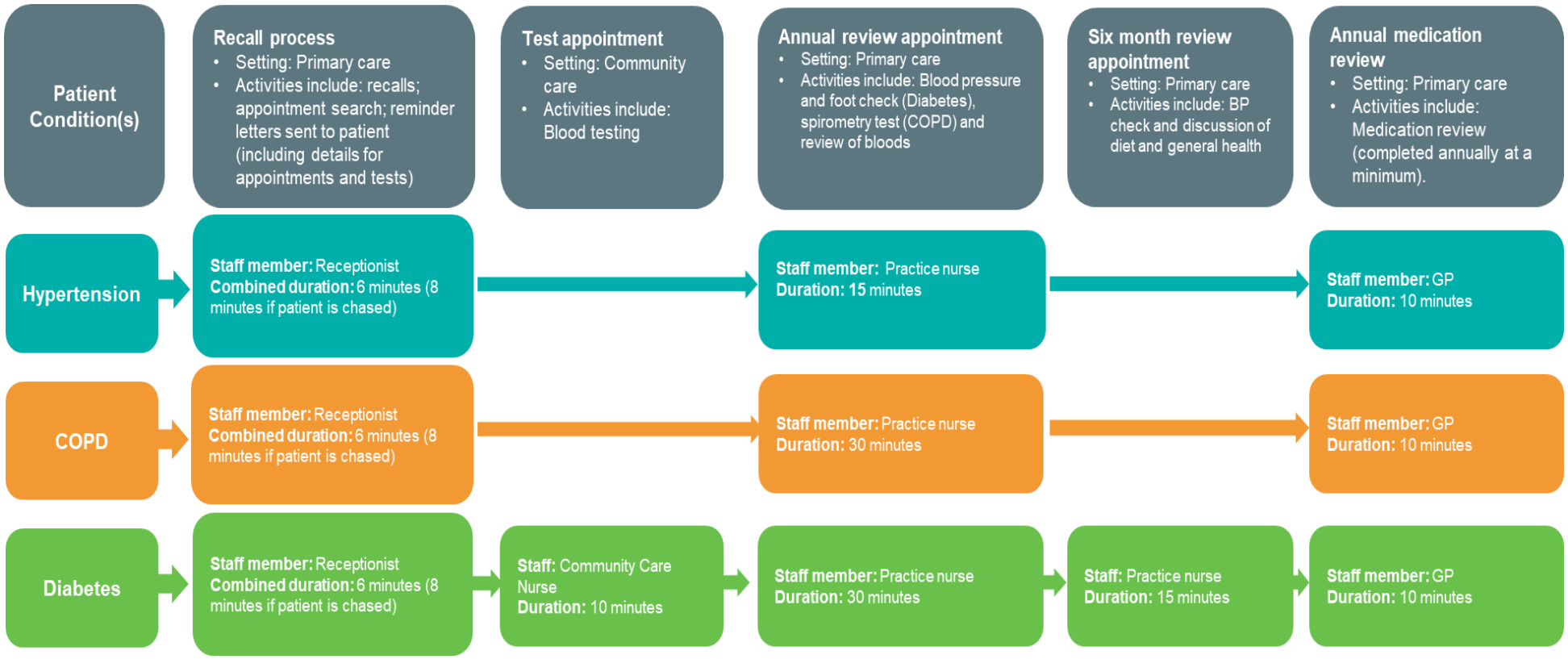


Figure 5.3 LTCF care pathway



5.4 Conclusion

The main findings from the analysis are:

- Clement Road Surgery have made very minor changes to the care pathway under the LTCF care pathways. They do not provide a different care pathway for patients with a combination of conditions. The annual review appointments under the QOF and LTCF care pathways are of the same duration and delivered by the same staff.
- The main difference is that patients with hypertension receive monitoring and support for their condition under the LTCF care pathways, whereas they did not under the QOF care pathways.
- There is a slight reduction in the time taken for administrative tasks under the LTCF care pathways compared to the QOF care pathways.
- The additional monitoring and support of patients with hypertension in the LTCF care pathways compared to the QOF care pathways means that significantly more practice staff time has been committed (around an extra 300 staff hours per year).

6 Approach to the economic analysis

This section briefly outlines the methodology used to estimate changes in the cost of the care pathways[34] under QOF and the LTCF. The approach uses information collected during the case study interviews with GP practices and publicly available data and literature.

6.1 Approach used

To estimate the total value of the care pathways, costs for three groups have been calculated:

- GP practices;[35]
- the economy (employed individuals taking time off work to attend appointments); and
- individuals (non-employed individuals taking time to attend appointments when they could be taking part in other leisure activities).

The annual cost of the care pathways has been estimated.

6.1.1 Cost to GP practices

The cost estimates are based on the information provided by the GP practices. Practices provided information about the actions required to set-up and conduct the monitoring of LTCs in their practice. They provided a description of the action, the staff member responsible (job role and level), the average duration of the action (per patient), and any additional cost items relating to the action.

To estimate the cost of the care pathway for each LTC, the duration of time required per action has been multiplied by the unit cost for that member of staff (cost per hour), derived from national estimates not practice costs, and the number of patients requiring the action. Any additional costs (for example mail costs) have been added to this.

6.1.2 Cost to the economy

Previous work by ICF and the Strategy Unit (for the Black Country Sustainability and Transformation Partnership) has shown the value of including the perspective of patients and the wider economy. The way that services are delivered have potential wider economic impacts – e.g. taking more / less patient time and so affecting participation in the labour market / employer productivity.

The cost to the economy of employed individuals attending LTC monitoring appointments is estimated using the duration of time an individual spends absent from work because of the appointment.[36]

[34] By 'care pathway' we mean all contacts that are part of the annual review process, based on a 'typical' patient.

[35] In some care pathways, a "Test appointment" where patients have a blood test is included, and the setting is assumed to be a community care setting. This cost has been included in the cost to the GP practice as it is a relatively small cost for each care pathway.

[36] This assumes that the time for appointments is lost time to employers – that employees do not take appointments in annual leave or work additional overtime as a result of attending appointments.

It has been assumed that individuals of same age are equally likely to have a LTC regardless of their employment status. The rate of employment used in the calculations is that for individuals aged over 50, as the majority of people with a LTC are aged over 50 years.

The number of patients with a condition has therefore been multiplied by the employment rate to estimate the number of patients with a LTC that are employed.

There are three separate components to the duration of absence:

- The time an individual spends travelling to and from the GP practice to attend their appointment. This is assumed to be the duration of time to travel from home to the GP practice and the journey duration between the GP practice and their workplace (assuming the appointment is at the beginning or end of the day);
- The duration of time an individual spends waiting in the GP practice for their appointment to begin; and
- The duration of their appointment.

These three portions of time are multiplied by the average value of production to estimate the total value of the loss to the economy.

6.1.3 Cost in lost leisure time

The calculation to estimate the cost of the time lost for non-employed individuals who attend LTC monitoring appointments is similar to the approach described above, but with two notable differences. These are:

- The time spent travelling to and from the GP appointment is assumed to be two times the journey duration between home and the GP practice (as they are assumed to be travelling to and from their home to the GP practice); and
- The portions of time are multiplied by the average value of leisure time instead of the average value of production.

The number of patients who are not employed is calculated in a similar way to above, with the total number of patients multiplied by the percentage of individuals aged over 50 who are not employed.

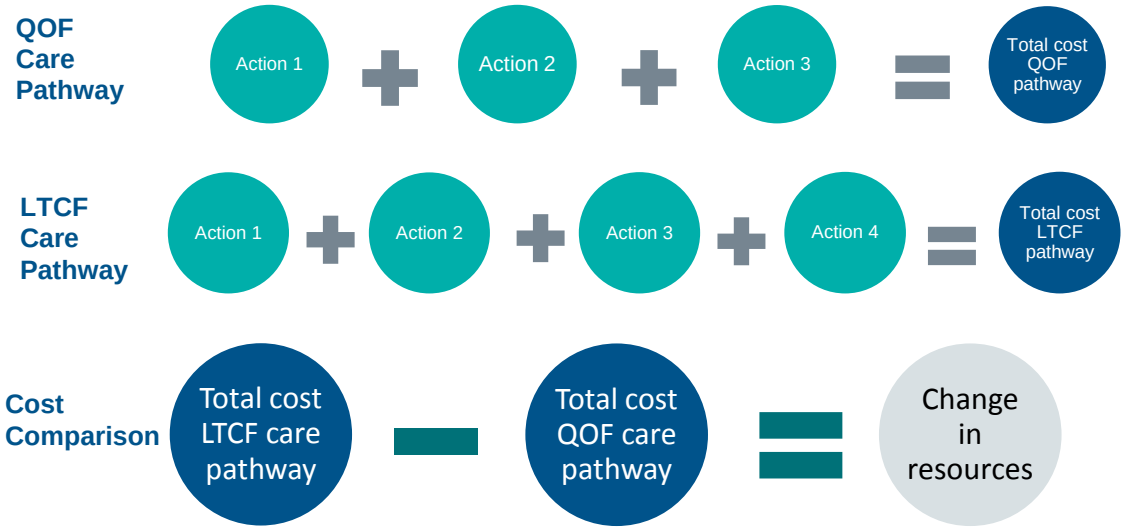
6.1.4 Change in cost between the care pathways

The change in the cost of providing care under the LTCF rather than the QOF has been calculated by comparing the costs incurred under each pathway. The change in costs to GP practices, the economy and non-employed individuals has been calculated. The costs incurred under the pathway for LTCF have been subtracted from the costs incurred under the pathway for QOF. A negative value indicates that the LTCF care pathway is less costly than the QOF care pathway; a positive value indicates an increase in costs.

The cost comparison exercise did not include an assessment of the quality of care a patient receives, just the cost of the actions required. The analysis therefore foregoes important considerations of patient experience and outcomes, focusing solely on the question of cost.

An illustration of the cost comparison exercise is presented in Figure 6.1.

Figure 6.1 Cost comparison exercise methodology



6.2 Data sources

Table 6.1 presents the sources of data that have been used to estimate the value of the care pathways under QOF and LTCF. A detailed description of the data and values used (both duration and cost values) is presented in Annex 3.

Table 6.1 Sources of data used in the cost estimations of the care pathways

Information required for…	Source of data
The duration of appointments and actions required for the care pathways	Interviews with GP practices
The staff responsible for the appointments and actions	Interviews with GP practices
Staff time required for appointments and actions	Interviews with GP practices
The cost of staff time required for appointments and actions	Interviews with GP practices PSSRU (2017); The unit cost of health and social care 2016
The travel time required for patients to attend appointments	Department of Transport; Journey time Statistics; Labour Force Survey
The duration of waiting times for patients attending appointments	GP patient survey
The employment rate of individuals aged over 50 years	Annual Population Survey
The value of time for employed individuals	Regional GVA estimates
The value of time for non-employed individuals	Department of Transport value of leisure time
Number of individuals with LTC	Interviews with GP practices

6.3 Sensitivity analysis

The calculations used to estimate the cost of the QOF and LTCF care pathways are underpinned by a set of assumptions (a complete list of assumptions and data is available in Annex 3). Therefore the best estimates presented in each of the case studies include a degree of uncertainty. In each case study the results of a sensitivity analysis are presented (see Annex 2). The sensitivity analysis presents a

range of values (a high and a low estimate), increasing confidence that the true value lies within that range.

7 Results of the economic analysis

This section presents an analysis of the time taken to support patients with LTCs under QOF and the LTCF and the cost implications of this support. An analysis for each practice is presented. The results below use the information on the care pathways particular to each practice (from section 3.3 to section 5.3) and the method described in section 6.

NOTE: The analysis presented in this section is based on information gathered at local practice level interviews with HCPs and practice managers. This information was then extrapolated using national level cost data (PSSRU, 2017). As a result, the costings and analysis presented below is **solely illustrative** and **does not** provide a true account of the actual costs incurred by each case study practice or locally under either QOF or LTCF. **The analysis provides examples of what the potential cost implications could be using local care pathways as a basis**. This means that any cost saving or costs incurred that are reported **do not indicate a change in overall expenditure for the GP practice**.

7.1 AW Surgeries

The tables below present estimates of the costs and time taken to support individuals under QOF and the LTCF at AW Surgeries.

7.1.1 QOF

Table 7.1 shows estimates of the time requirements and cost implications of providing support to patients under QOF at AW surgeries. In total, over 2,000 hours of GP practice staff time is used to provide the support, and nearly 5,000 hours of patient time is spent (including travelling and waiting time). This support is estimated to cost the GP practice nearly £250,000 a year, with smaller costs to the economy (£50,000) and a loss of leisure time (£28,000). Most of the costs are for patients with diabetes.

Table 7.1 Time and cost requirements to support patients with long term conditions under QOF

	Hypertension	COPD	Diabetes	Total
GP practice staff time (hours)	500	400	1,400	2,200
Patient time (hours)	1,000	800	3,400	5,200
Annual GP practice cost	£95,000	£25,000	£125,000	£245,000
Annual cost to economy	£11,000	£8,000	£31,000	£50,000
Annual loss of leisure time	£6,000	£4,000	£18,000	£28,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.1.2 LTCF

The resources used to support patients under the LTCF are presented in Table 7.2. The support provided to patients with LTCs uses 3,600 hours of staff time and 5,700

hours of patient time spent. The estimated cost to the health service is just over £200,000.

Table 7.2 Time and cost requirements to support patients with long term conditions under LTCF

	Hypertension only	COPD only	Diabetes only	Combination of conditions	Total
GP practice staff time (hours)	1,100	200	500	1,800	3,600
Patient time (hours)	1,400	400	800	3,100	5,600
Annual GP practice cost	£65,000	£12,000	£26,000	£101,000	£204,000
Annual cost to economy	£15,000	£3,000	£8,000	£31,000	£57,000
Annual loss of leisure time	£8,000	£2,000	£5,000	£18,000	£32,000

ICF analysis All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.1.3 Change in resources

Table 7.3 shows that at AW Surgeries, providing support for patients with LTCs under the LTCF uses significantly more GP practice staff time (more than 1,000 more staff hours, 60% more than under QOF). Patients also provide more time (8% more time than under QOF), which leads to an increase in the cost to the economy and loss of leisure time under LTCF comparted to QOF. Despite these increases in time, the cost to the GP practice of providing support under the LTCF is lower than under QOF (£41,000, 17% lower per year).

Table 7.3 Difference in resources used under QOF and LTCF to support patients with LTCs

	Difference
GP practice staff time (hours)	1,300
Patient time (hours)	400
Annual GP practice cost	-£41,000
Annual cost to economy	£7,000
Annual loss of leisure time	£4,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.1.3.2 Reasons for differences

There are several factors, which are influencing the amount of staff time and costs used to provide support to patients with LTCs. When examining the differences in between the QOF and LTCF pathways, these factors change the resources used in different directions (some increase costs and the time used, others reduce it). The main reasons for the differences in resources between the two care pathways are:

- **The provision of support for hypertension.** Under QOF, patients with hypertension did not receive a standard annual appointment. Patients had appointments for hypertension opportunistically. It was estimated that 25% of patients had an appointment to monitor their hypertension each year. Under the

LTCF, all patients with hypertension have an appointment to monitor their condition. Therefore, the number of patients with hypertension receiving support and the duration of support is higher under the LTCF than QOF.

- **The staff providing support for patients with hypertension**. The average duration of support per patient with hypertension is higher under LTCF than QOF. However, under QOF patients with hypertension were seen by a GP. Under the LTCF, patients are seen for their annual appointment by a Healthcare Assistant. Therefore, although the duration of NHS support is higher under the LTCF, the cost of the support is lower.
- **The duration of administrative support.** The duration of administrative support is higher under the LTCF than under QOF. This additional administrative time is to ensure patients are receiving the correct support by the most appropriate member of staff. This increases the cost of providing support under the LTCF.
- **The total duration of support provided for each care pathway per patient is higher under the LTCF than under QOF.** This increases the amount of GP practice staff time used to provide support. However, patients with multiple conditions now only attend one annual appointment (and one six month follow up), rather than one annual appointment per condition they have. This reduces the number of patient appointments (and staff and patient time) used to attend appointments (including travelling and waiting time).
- **The staff providing support for diabetes patients**. Under QOF, GPs were undertook some of the appointments with patients with diabetes. Under the LTCF, all patient appointments (except for the review of medicine) are undertaken by a practice nurse or healthcare assistant, who have a lower unit cost than A GP. This means that the cost of the care pathway is lower under the LTCF.

7.2 Northway

The tables below present estimates of the time taken and the costs to support individuals under QOF and the LTCF at Northway Surgery.

7.2.1 QOF

Table 7.4 shows estimates of the time requirements and cost implications of providing support to patients under QOF. In total, 1,000 hours of GP practice staff time is used to provide the support, and 2,500 hours of patient time spent (including travelling and waiting time). This support is estimated to cost the practice £78,000, with smaller costs to the economy and loss of leisure time. Most of the health service costs are for patients with hypertension.

Table 7.4 Time and cost requirements to support patients with long term conditions under QOF

	Hypertension	COPD	Diabetes	Total
GP practice staff time (hours)	500	100	400	1,000
Patient time (hours)	900	300	1,200	2,300
Annual GP practice cost	£45,000	£6,000	£27,000	£78,000
Annual cost to economy	£10,000	£2,000	£12,000	£24,000
Annual loss of leisure time	£5,000	£1,000	£7,000	£13,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.2.2 LTCF

The resources used to support patients under the LTCF are presented in Table 7.5. The support provided to patients with LTCs requires 1,100 hours of health service staff resource and over 2,000 hours of patient time spent. The estimated cost to the health service is £77,000.

Table 7.5 Time and cost requirements to support patients with long term conditions under LTCF

	Hypertension only	COPD only	Diabetes only	Combination of conditions	Total
GP practice staff time (hours)	600	0	100	400	1,100
Patient time (hours)	1,000	100	300	700	2,100
Annual GP practice cost	£40,000	£3,000	£9,000	£25,000	£77,000
Annual cost to economy	£11,000	£1,000	£3,000	£8,000	£22,000
Annual loss of leisure time	£6,000	£0	£2,000	£4,000	£12,000

ICF analysis All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.2.3 Change in resources

Table 7.6 shows that providing support for patients with LTCs under the LTCF requires more health service staff time (200 hours more staff time, 18% more than under QOF). Patients spend slightly less time (6% more time than under QOF), which leads to a decrease in the cost to the economy and loss of leisure time under LTCF comparted to QOF. The increase in staff time does not lead to any significant change in the cost of providing support under the LTCF compared to under QOF.

Table 7.6 Difference in resources used under QOF and LTCF to support patients with LTCs

	Difference
GP practice staff time (hours)	200
Patient time (hours)	-100
Annual GP practice cost	£0
Annual cost to economy	-£2,000
Annual loss of leisure time	-£1,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.2.3.2 Reasons for differences

The care pathways have been significantly redesigned at Northway Surgery. The practice has introduced new care pathways for patients who have multiple conditions and altered the delivery of care pathways for individuals with a single

long-term condition. This has led to changes in the amount of staff time and cost used to provide it. The main reasons for the differences in costs between the QOF and LTCF care pathways are:

- **The provision of support for hypertension.** Under QOF, patients with hypertension did not receive a standard annual appointment. Patients were seen opportunistically, with an estimated 25% of patients seen each year. Under the LTCF, all patients with hypertension have an appointment, which increases the number of patients receiving support and the duration of support the LTCF.
- **The duration of support per patient for patients with a single condition is the same under QOF and LTCF**. This means that the duration of staff time per patient remains the same. However, the skill mix of staff has been changed for some care pathways, with Advanced Nurse Practitioners providing support where previously Healthcare Assistants provided appointments. This increases the cost of the care pathways.[37]
- **Patients with multiple conditions only attend one annual appointment under LTCF** (and one six month follow up), rather than one annual appointment per condition they have (under QOF). This reduces the number of patient appointments (and staff and patient time) used to attend appointments.
- **The duration of administrative support.** The duration of administrative support is higher under the LTCF than under QOF. This additional administrative time is to ensure patients are receiving the correct support by the most appropriate member of staff. This increases the cost of providing support under the LTCF.
- **The staff providing support**. Under QOF, some of the appointments for patients with LTCs were undertaken by Healthcare Assistants. However, under the LTCF, all appointments (other than those for patients with only hypertension) are undertaken by an Advanced Nurse Practitioner, who have a higher unit cost than a Healthcare Assistant. This increases the cost of the care pathway under the LTCF.

7.3 Clement Road

The tables below present estimates of the time taken and the costs to support individuals under QOF and the LTCF at Clement Road Surgery.

7.3.1 QOF

Table 7.7 shows estimates of the time requirements and cost implications of providing support to patients under QOF at Clement Road. In total, 300 hours of health service staff time is used to provide the support and 700 hours of patient time spent (including travelling and waiting time). This support is estimated to cost the health service £210,000, with smaller costs to the economy and a loss of leisure time. Most of the costs are for patients with diabetes. There is no time and cost for support for patients with hypertension, as there was formal support under QOF.

[37] The duration for patients with only diabetes is slightly lower under the LTCF than under QOF, as there is no longer a short catch-up appointment with a diabetes specialist under the LTCF.

Table 7.7 Time and cost requirements to support patients with long term conditions under QOF

	Hypertension	COPD	Diabetes	Total
GP practice staff time (hours)	0	100	200	300
Patient time (hours)	0	100	700	800
Annual GP practice cost	£0	£4,000	£16,000	£21,000
Annual cost to economy	£0	£1,000	£6,000	£7,000
Annual loss of leisure time	£0	£1,000	£3,000	£4,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.3.2 LTCF

The resources used to support patients under the LTCF at Clement Road are presented in Table 7.8. The support provided to patients with LTCs requires 600 hours of GP practice staff resource and 1,400 hours of patient time spent. The estimated cost to the health service is £50,000. There are no costs for a combination of conditions, as a combined conditions pathway has not been introduced.

Table 7.8 Time and cost requirements to support patients with long term conditions under LTCF

	Hypertension only	COPD only	Diabetes only	Combination of conditions	Total
GP practice staff time (hours)	300	100	200	0	600
Patient time (hours)	700	100	700	0	1,500
Annual GP practice cost	£30,000	£4,000	£16,000	£0	£50,000
Annual cost to economy	£7,000	£1,000	£6,000	£0	£15,000
Annual loss of leisure time	£4,000	£1,000	£3,000	£0	£8,000

ICF analysis All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.3.3 Change in resources

Table 7.9 shows that providing support for patients with LTCs under the LTCF requires significantly more health service staff time (300 more staff hours, more than double than used under QOF). Patients also spend more time (80% more time than under QOF), which leads to an increase in the cost to the economy and loss of leisure time under LTCF compared to QOF. The increase in NHS staff time used leads to an increase in GP practice cost of providing support under the LTCF compared to under QOF (£30,000 more per year, 144% more expensive).

Table 7.9 Difference in resources used under QOF and LTCF to support patients with LTCs

	Difference
GP practice staff time (hours)	300
Patient time (hours)	700
Annual GP practice cost	£30,000
Annual cost to economy	£7,000
Annual loss of leisure time	£4,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

7.3.3.2 Reasons for differences

There is little difference between the costs and time used to provide support under QOF and the LTCF at Clement Road Surgery for patients with diabetes and COPD. The main reason for the similarities are that appointments are delivered by the same grade of staff and have the same duration under both QOF and the LTCF. Individuals with multiple conditions still receive a separate appointment for each condition they have. The differences that exist can be explained by the following reasons:

- **The provision of support for hypertension**. Under QOF, patients with hypertension did not receive an annual appointment as standard. Patients were consulted about their hypertension opportunistically, in other appointments while they were at the GP surgery. Under the LTCF, patients with hypertension have an appointment, which increases the staff hours and costs associated with delivering support under LTCF. It also increases the amount of time patients spend at the GP surgery (including travelling and waiting time), which increases the cost to the economy and loss of leisure time under the LTCF.
- **Administration time**. The amount of time used for administration per patient with diabetes and COPD is estimated to be lower under the LTCF than under QOF. This reduces the amount of health care staff time used. However, as under the LTCF there is now an administrative cost for patients with hypertension, the overall administrative cost under the LTCF is higher than under QOF.

8 Conclusions from Part A

This section presents the conclusions of this analysis, and how the findings answer the research aims of the study.

8.1 Comparison of care pathways

The results of the case study analysis show that:

- There was more variety in the approaches taken to monitoring and support under the QOF framework than there is under the LTCF framework. For example, hypertension was not monitored formally under any of the QOF care pathways, with patients seen opportunistically. This led to different numbers of patients being seen in each practice.
- The duration of appointments and staff members responsible for appointments for different conditions also showed greater variability under the QOF care pathways than under the LTCF care pathways. Under LTCF patients across Dudley ought to receive a more standard approach to the monitoring of LTCs.
- At AW Surgeries the practice could consider whether to substitute some GP and Practice Nurse time for Healthcare Assistant time. AW Surgeries is a large practice with more staff than the other case study practices, so has more scope to change the profile of staff undertaking appointments.

The commonalities between all three case study practices were:

- The number of hours for some staff committed to deliver the care pathways under the LTCF is higher than under QOF care pathways. This was due to some increases in administration time, but was also due to more individuals with hypertension receiving support. Individual appointments may be longer particularly for those with a combination of conditions, however at a practice resource level this is likely to be offset by the streamlining of appointments into one review (which occurred in two practices).
- In general, there was an increase in administration hours spent. This was due to practice staff spending longer identifying patients requiring appointments and communicating with colleagues to ensure the patient received the correct support.

8.1.1 Comparison between Surgeries

The surgeries analysed for this study have taken different approaches to implementing the LTCF. Table 8.1 summarises the changes that have been made at each practice. In general, the larger the practice the more they have made changes to the care pathways and to the skills mix of the staff providing care. This could be due to the larger surgeries having more resource and scope to change the skills mix of provision and to redesign the care pathway.

Table 8.1 Summary of changes made to care pathways when moving from QOF to the LTCF by practice

	AW Surgeries	Northway	Clement Road
Size of practice	Large	Medium	Small
Redesign of care pathways	✓✓	✓✓	0
Change of skill mix of delivery staff	✓✓	✓	0
Change in staff hours for administration	+++	+++	-
Change in staff hours for delivery	+	+	+++
Change in patient hours	+	-	+++
Change in GP practice cost	-	0	+++

ICF analysis

8.2 Insights for supporting the rollout of the LTCF

The case study research provides some insight into how the rollout of the LTCF may be supported to ensure successful implementation. This includes:

- Demonstrating that although the LTCF may involve additional staff inputs to deliver at a practice level, the appointments can be delivered by a different staff mix. This may be more of a challenge for smaller practices with fewer staff members who may perceive that the resource needed to make changes outweighs the benefit realised from streamlining appointments.
- Developing training and support for administrative teams. A significant amount of the resource committed to deliver LTCF has come from administrative staff. There is potential for this time to decrease as staff become more familiar with organising more complex appointments. However this also suggests that this may be an area for the CCG to focus; providing further support to practices to minimise the administrative burden associated with identifying patients with multiple LTCs and selecting the relevant HCPs with the skillset to deliver their care. At present, practices report the absence of a system that can support them to efficiently and effectively identify and recall patients with co-morbidities. Developments to enable practices to do this would decrease the investment of time and resource used from administrative staff.
- Showing that providing combined appointments for patients with multiple conditions is beneficial to the practice and to the patient. Under QOF, patients attended appointments at different times for different conditions. If these appointments are combined, then there should be a reduction in duration and total number of appointments at the practice level. This would be additionally beneficial to patients, as they would spend less time travelling to and waiting at the GP surgery (and attending the appointment), leading to improved patient experience.
- The AW Surgeries case study provides an example of how combining appointments and making changes to skill mix can actually increase patient contact time in one sitting (of benefit for effective and collaborative care planning), while freeing up GP time to concentrate on other elements of primary care. This approach also offers the potential to free up appointment time through streamlining multiple contacts into one holistic review.

- This research has analysed and described the resource implications of different care pathways for practices. However, it has not been within scope to explore any potential improvements in the quality of care, patient experience or patient outcomes. These may include:
  - Reductions in future hospital admissions for health problems linked to LTCs arising from better management of their conditions;
  - Improved confidence among patients and support to self-manage thereby reducing the longer term need for primary care contact and associated savings in staff time and other resources, even for practices that have made fewer changes; and
  - Longer term impacts due to better care for patients with hypertension. While the immediate increased investment of delivering this have been described, these could be outweighed by improved prevention, management and outcomes for people with hypertension.

The potential for some of these wider effects to arise is considered in Part B of this report.

Part B: Evidence review and illustrative model

9 Introduction to Part B

Part B presents the findings from a brief evidence review to explore the potential impact of the new care pathways on the self-management of patients and an illustrative example of wider health service impacts. It follows on from the description of how care pathways for LTCs have been changed under the new framework in Dudley and an estimation of the economic effect on GP practices of implementing the new care pathways, presented in Part A.

In many ways, the analysis presented here is exploratory and even somewhat speculative in parts. It seeks to examine the extent to which there might be wider system benefits following from changes in the way that LTCs are managed in primary care. The uncertainties inherent in this undertaking are significant. They include the extent to which there really have been changes in LTC management (addressed, but not settled in Part A and the previous evaluation) and the extent to which evidence of effects from elsewhere could reasonably be expected to occur in Dudley. Findings presented should be read with these significant provisos in mind.

9.1 Method

The information provided in Part B is from a short, focused review of published evidence. The research team reviewed existing evidence on how improved management of LTCs may impact on the wider health service in terms of: primary and secondary care utilisation and the effect on patient wellbeing.

The evidence review has examined the effect of a broad range of interventions comparable to changes promoted as part of the implementation of LTCF. These changes include a focus on care planning and goal setting, supported self-management and a more holistic approach to the management of LTCs.

The review of literature was undertaken in two stages: 1) identifying a list of sources for inclusion in the review; and 2) reviewing sources and capturing relevant information from these in a data extraction template. Inclusion criteria were established to support the identification of relevant documents, the criteria are listed below (more details on these can be found in Annex 4):

- Studies published in English;
- Initially studies published in the last ten years (since 2007); although this was expanded when examining literature for condition specific findings;
- Studies that provide quantitative information on the topic with a robust research methodology; and
- Studies that assess chronic or LTCs, with a focus on diabetes, hypertension and/or chronic obstructive pulmonary disease (COPD), as these are the LTCs examined in Part A of the report.

To identify the literature, the research team searched for journal articles in EBSCO and the Cochrane database as well as a review of key stakeholder websites (e.g. the Health Foundation) and a broader web search for any further documents of relevance such as healthcare guidance. Search terms centred on topics analogous to the changes introduced in primary care as part of LTCF, terms included self-management, care planning and LTCs. Further details of the research strategy and evidence reviewed including the full list of search terms, the number of results generated and the number of relevant results is presented in Annex 4.

The information collected in this review has also been used to develop a high-level model, which aims to provide a broad illustration of how better monitoring and management of LTCs could affect healthcare utilisation in Dudley, this is presented in Section **Error! Reference source not found.** of this report.

9.2 The structure of Part B

The remainder of this Part is structured as follows:

- Section 10 presents the findings from the evidence review on the potential effect of better management of LTCs on healthcare utilisation and patient wellbeing; and
- Section 11 summarises the findings from the evidence review and effect sizes before presenting a high level, illustrative model of how improvements in the monitoring of LTCs could affect healthcare utilisation.

These sections are completed with Part B Annexes:

- Annex 4: Literature review methodology.
- Annex 5: Data and assumptions used to estimate monetary value of wider system changes.
- Annex 6: References for the literature review.

10 Effects of better LTC management

The LTCF is intended to drive a more holistic and integrated approach to the management of LTCs, including collaborative care planning and the promotion of self-management. This section presents the findings from the evidence review on the potential effect of better management of LTCs on healthcare utilisation and patient wellbeing. Findings from the literature review have been split into three main sections: the potential effect of improved LTC management on clinical markers; the effect of changes in LTC management on healthcare utilisation; and the effect that better management of conditions has on patient wellbeing.[38]

10.1 Impact on clinical markers

Self-management programmes report some evidence of improved clinical outcomes, however impact varies by the type of self-management intervention and the particular condition targeted (Ahmad et al. 2014). Furthermore, long-term impacts are not well evidenced and the extent to which clinical outcomes are sustainable, and what factors might help to sustain them, remains unclear.

While some studies suggest a direct relationship between interventions supporting self-management and improved clinical outcomes, others suggest a correlation but not necessarily a causal relationship (De Silva, 2011). Differing results may be due to the varying quality of research in this area. However, as with other outcomes, the level of patient engagement and activity is likely to be an important factor in improving clinical outcomes (De Silva, 2011). For example, Hibbard and Gilburt (2014) report that patients with higher 'activation levels' are more likely to have clinical indicators in the normal range (e.g. Body Mass Index, blood sugar levels, blood pressure and cholesterol).

The concept of / achieving greater 'patient activation' has been linked to positive clinical outcomes in healthy patients as well as patients with many different forms of physical health conditions, including a complex mix of conditions, and mental health conditions. For example, evidence suggests a positive impact of patient activation on conditions including diabetes (glycaemic control and blood pressure), asthma (improved lung function), arthritis (reductions in pain and fatigue, improved activity levels, aerobic capacity and exercise endurance and reduced levels of disability and functional limitations), COPD, hypertension and cardiovascular disease (Hibbard and Gilburt, 2014).

Effects on clinical markers for people with LTCs involved in personalised care planning, which supports self-management, have also been reported. A systematic review of 19 randomised control trials (RCTs) (Coulter et al. 2015) showed that care planning was associated with small improvements in indicators of physical health (e.g. control of asthma, blood glucose levels and blood pressure measurement). Effect sizes were greatest where care planning was more comprehensive, intensive and better integrated into routine care.

The following studies provide more detail on the impact of self-management interventions on clinical outcomes for some of the conditions mentioned in Part A of this report.

McManus et al. (2010) evaluated a self-management intervention for patients with hypertension in 24 UK GP Practices. The intervention allowed patients to self-

[38] Effect sizes from the studies described in this section are presented in Table 11.1.

monitor blood pressure and self-titrate antihypertensive drugs and was found to lead to decreased systolic blood pressure. This indicates that improvements in self-management of a patient's condition contributes to lower blood pressure.

A further study in 11 Canadian GP practices (Zarnke et al., 1997) examined the efficacy of a patient-directed management strategy compared to office-based management for patients with hypertension, examining the effect of both in maintaining blood pressure control in patients with chronic stable hypertension. Patients who monitored their symptoms in the patient-directed management group adjusted their treatment correctly when necessary and saw a significant decrease in blood pressure. This again demonstrates that self-management of hypertension has contributed to a positive effect on a patient's general health.

10.2 Effect of changes in management of condition on healthcare utilisation

The literature suggests that facilitating patient self-care can have a positive impact on healthcare service usage, with some evidence suggesting that self-management programmes can reduce visits to health services by up to 80% (Ahmad et al. 2014). However the overall evidence base paints a rather mixed picture. Causal links between self-management and healthcare utilisation outcomes are difficult to prove and often fall beyond the scope or timeframe of studies. Furthermore, evidence varies considerably between different conditions and the outcomes considered.

In most cases, impacts are greater on secondary care service utilisation compared to primary care, particularly on the number of unplanned admissions (De Silva, 2011). This is elaborated below.

10.2.1 Primary care

A number of systematic reviews have found limited evidence that greater self-management of chronic conditions leads to a reduction in primary healthcare utilisation. Franek (2013) conducted a systematic assessment of the clinical effectiveness of self-management support interventions for patients with chronic diseases. Of the ten RCTs that met the inclusion criteria, no statistically significant differences in visits to GP practices were observed between the treatment and control groups. However, the studies only measured the effect in the short-term (six months) and the quality grading of the studies was generally deemed to be low.

Another systematic review conducted by Foster et al. (2007) assessed the effectiveness of self-management programmes for people with chronic conditions. Of the nine studies reviewed that examined healthcare utilisation outcomes, there were no statistically significant differences between groups in GP attendance. Further studies by Garvey et al. (2015) and Kennedy et al. (2007) also found no statistical difference in healthcare utilisation following interventions to improve management of healthcare conditions.

Some of the literature examined for this project did show primary healthcare use reducing following interventions to improve self-management of LTCs. Although, this should be treated with caution as the quality of this research is variable.

For example, a more recent systematic review (Crowe et al. 2016) analysed the effectiveness of health management interventions for older people with multi-morbidities. Six studies included in the review provided results on healthcare utilisation. Of these, three studies identified some statistically significant reductions

in service use (although the overall strength of this for improvements in health service utilisation was deemed to be low).

A systematic review and meta-analysis conducted by Panagioti et al. (2014) looked at 184 studies to examine evidence for reducing care utilisation through self-management interventions. They found that self-management support interventions can reduce health service utilisation without compromising patient health outcomes, although effects were generally small. The evidence was strongest for respiratory and cardiovascular disorders.

A twenty month RCT (Boult et al., 2011) measured the effect of guided care teams on older patients' with multi-morbidities, use of health services. A guided care nurse worked in partnership with patients' GPs to provide a number of services including evidence-based care planning, support for self-management and enhanced access to community services. The only statistically significant effect of guided care in the whole sample was a reduction in episodes of home health care.

Overall, while the evidence around the impacts on primary care utilisation is mixed - in some cases showing that utilisation may not have reduced (and even increased), evidence suggests that the quality of primary care interactions may have improved. For example, empirical studies indicate that individuals who are more activated are significantly more likely to attend screenings, check-ups and immunisations, prepare questions for a GP visit and ask for clarifications if they don't understand. They are also more likely to adhere to treatment and condition monitoring and obtain regular care associated with the condition (Hibbard and Gilburt, 2014).

10.2.2 Secondary care

A similar picture in terms of variation emerges from the literature on the relationship between increased self-management of LTCs and secondary healthcare usage.

Franek's (2013) systematic review examined evidence from ten RCTs. The study found that, for patients with chronic diseases, there were no statistically significant differences between treatment and control groups in visits to emergency departments; days in hospital or hospitalisations.

Similarly, another systematic review (Foster et al., 2007) identified six studies examining the effectiveness of management programmes for people with LTCs, which found no statistically significant differences between intervention and control groups for secondary healthcare utilisation or days/nights spent in hospital.

Some individual studies do, however, find that secondary care utilisation is reduced amongst patients with chronic conditions following management interventions. Self-care of LTCs has been shown to reduce A&E attendances (Imison et al. 2017; Hibbard and Gilburt, 2014), especially for adults with asthma, and potentially heart failure.

Positive results were also found by Ahn et al. (2013), which showed significant reductions in A&E admittance as well as hospital admissions amongst participants on chronic disease self-management programmes. Another study, using a cluster RCT, analysed the effectiveness of tailored practice and patient care plans (including motivational interviewing and goal and target setting) for patients with coronary heart disease. This found that the number of patients admitted to hospital over the 18 month study period significantly decreased in the intervention group compared with the control group (Murphy et al. (2009).

Reductions in unplanned hospital admissions, such as those above, have been linked to cost savings among more activated patients (Hibbard and Gilburt, 2014).

10.2.3 Condition specific findings

The findings presented above show the effect of improved management of conditions on healthcare utilisation for general LTCs. The findings below show the effects for a number of specific conditions – namely COPD and hypertension.

10.2.3.1 COPD

The individual studies, which examined the effect of management of COPD on secondary care utilisation mainly showed that improvements reduced healthcare utilisation.

- Bourbeau et al. (2003) used an RCT approach to measure the effect of a management intervention on the use of hospital services for patients with COPD. Hospital admissions for exacerbation of COPD were reduced, as were admissions for other health problems, emergency department admissions and unscheduled GP visits.
- A further study by Howcroft et al. (2016) examined the effects of an action plan for COPD combined with brief patient education on later healthcare utilisation. The study found that patients with an action plan had lower rates of hospital admissions and A&E attendances (combined) for COPD (although when hospital admittances were examined alone the results were not statistically significant).
- Another study by Zwerink et al. (2014) examined whether self-management interventions in COPD lead to reduced healthcare utilisation. The study concluded that self-management interventions in patients with COPD are associated with a reduction in respiratory-related hospital admissions.

However, a study by Smidth et al. (2013) examined the effect of a disease management intervention for COPD on healthcare utilisation and observed no difference in use of emergency department services before and after the intervention.

10.2.3.2 Hypertension

The findings of the effect of better management for hypertensive patients showed more variation. The stage of hypertension was found to be a determining factor in whether patients could manage their condition to reduce healthcare utilisation.

For example, a study by Zarnke et al. (1997) found that patients with stable hypertension would require less healthcare resources when using self-management models of care. However, high risk patients using self-management models required more healthcare resources; patients using a self-management approach were more likely to need additional GP appointments than those monitored by a healthcare professional.

The costs of hypertension treatment were examined in a study by Hughes and McGuire (1998), which found that costs could be reduced for some lower-risk patients by switching from centralised care to self-care. However, for higher-risk patients switching to self-care models may increase costs to the NHS, due to greater levels of mismanagement of the condition, and the subsequent increase in the number of hospitalisations and doctor ‘call outs’ that follow.

In general, the evidence points to a complex link between people's involvement in their health and utilisation outcomes and there is still a lot to learn about the mechanisms of change, and particularly the relationships between patient self-efficacy, behaviour change, clinical outcomes and resource usage. In most cases, changes appear to be relational or reflect shifting patterns in healthcare use, rather than direct reductions in overall service utilisation (Ahmad et al. 2014). Furthermore, impacts on utilisation are likely to be greater the more activated or engaged a patient is in self-management (Imison et al. 2017).

10.3 Effects on patient wellbeing

The literature was also examined to find evidence of the effect of improvements in the management of LTCs on patient wellbeing. Overall evidence suggests that supporting self-management can improve quality of life, with a number of studies suggesting a link between self-management education, self-care behaviours and psychological outcomes, stress, ability to cope or quality of life. A systematic review (Coulter et al. 2015) reported care planning probably supported improvements in mental health and in people's confidence and skills to manage their health. However, as highlighted below, findings are varied, with some studies reporting that while self-management programmes and education led to behavioural change, they did not improve quality of life or health outcomes (De Silva, 2011).

10.3.1 Training to support patient self-management

A cluster RCT conducted by Kennedy et al. (2013) examined the effectiveness of general practice level training in a whole systems approach to self-management support for patients with chronic conditions in UK primary care. No statistically significant differences were found between patients attending trained practices and those attending control practices in generic health related quality of life measured at 12 months.

10.3.2 Self-management programmes

Crowe et al. (2016) conducted a systematic review of evidence on health management interventions for older people with multi-morbidities. The review found that of the twelve studies included in the review, ten reported statistically significant improvements in general health outcomes. However, only two of these studies were assessed as being at low risk of bias.

Richardson et al. (2008) assessed the cost effectiveness of a self-management programme for patients with chronic conditions. Over a 12-month period, the patients in the self-management programme had a higher average quality of life than those in a control group.

Another systematic review by Foster (2007) examined the effectiveness of self-management programmes for people with chronic conditions. The review found that six studies showed a statistically-significant improvement in self-rated general health and six studies showed a small, statistically-significant improvement in depression. There was also a small but not statistically significant improvement in psychological wellbeing based on evidence in five studies, but no difference between groups for health-related quality of life (based on three studies).

Similarly, Lorig et al. (1999) evaluated the effectiveness of a self-management programme for chronic disease. Treatment subjects, demonstrated improvements in

self-reported health, health distress, fatigue, disability, and social/role activities limitations compared to a control group. Finally, a study by Zwerink et al. (2014) found that self-management interventions in COPD lead to improved health-related quality of life.

10.4 Summary

This section presents the findings from a short, focused literature review. The effect sizes are summarised in the following section. The key findings are:

- A small number of studies were identified suggesting positive effects on clinical markers following from improvements in monitoring LTCs.
- Two large, systematic reviews found no statistically significant causal relationship between improvements in LTC management and primary care utilisation. A further two systematic reviews found limited evidence of a decrease in primary care utilisation as a result of improvements in the management of LTCs.
- Similar findings were discovered for the relationship between the management of LTCs and secondary care. Two systematic reviews found no significant causal relationship. Some individual studies did find positive results.
- Studies which examined specific LTCs were also reviewed. These studies showed more positive findings. Improvements in the management of COPD were found to reduce secondary healthcare utilisation in the majority of studies reviewed. The evidence also suggested that better management, monitoring and diagnosis of hypertension would lead to a reduction in healthcare utilisation.
- The evidence reviewed, including a large systematic review, suggests that better management of LTCs has a positive effect on patient wellbeing, including confidence and ability to cope. This suggests that there is medium evidence that improvements in the management of LTCs leads to an improvement in patient wellbeing.

11 Modelling potential system impacts

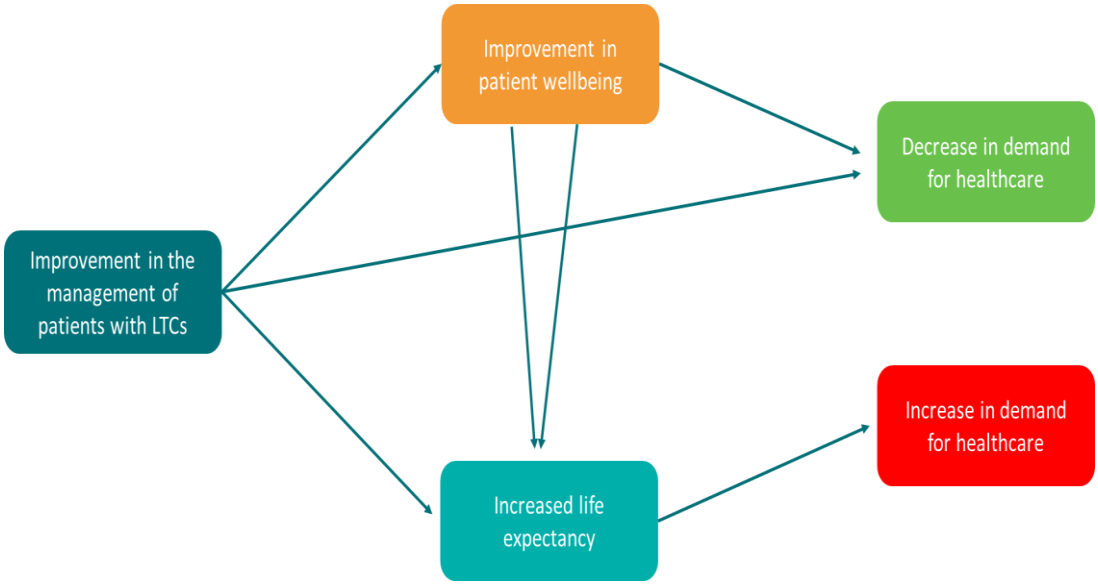
This section builds upon the evidence presented in the previous section. It presents a model of how improvements in the management of LTCs (promoted through the introduction of Dudley LTCF) could affect healthcare utilisation in Dudley. This is a slightly speculative / illustrative analysis given the difficulty of getting a firm analytical grip on associated uncertainties. Findings should be read with this significant proviso in mind.

11.1 Findings from the research

Overall, there is some evidence that improvements in the management of LTCs could contribute to small reductions in healthcare utilisation and improve patient well-being. The literature indicated that improved management does not generally lead to an increase in healthcare utilisation.

However, the evidence mainly looks at the short-term effects on healthcare utilisation (the impact over six, 12 or 18 months). By improving monitoring and the management of conditions, patients with LTCs can be expected to have a longer life expectancy. This may lead to an increase in demand for healthcare services in the longer term. This is illustrated in Figure 11.1.

Figure 11.1 How improvements in management of LTCs influence demand for healthcare services



The size of effects from the studies described above are presented in Table 11.1. Most of the meta-studies reviewed found no significant or very small effects. Some individual studies found larger impacts.

Table 11.1 Summary of size of impacts identified in literature review

Effect on	Primary Care	Secondary Care
Clinical markers	Hypertension ■ -0.95 mm/Hg mean blood pressure (Zarnke et al, 1997) ■ -3.7 mm/Hg systolic blood pressure (McManus et al, 2010) ■ -2.64 mm/Hg systolic Blood pressure (Coulter et al, 2015) Diabetes ■ +0.24% control of HbA1c (Coulter et al, 2015)	
Healthcare utilisation	■ No effect (Boult et al, 2011; Franek, 2013; Foster, 2007; Garvey et al, 2015; Kennedy et al, 2013) ■ 0 to -0.1 appointments / patient (Crowe et al, 2016) ■ -80% (Ahmad et al, 2014) COPD ■ -59% (Bourbeau et al, 2003) Hypertension ■ +0.85 appointments / patient (Zarnke et al, 1997)	■ No effect (Boult et al, 2011; Franek, 2013; Foster, 2007; Garvey et al, 2015; Kennedy et al, 2013; Smidth et al, 2013) ■ 0 to -0.2 in hospital stays / patient (Crowe et al, 2016) ■ -0.19 stays / patient (Panagioti et al, 2014) ■ -5% Emergency Admissions (Ahn et al, 2013) ■ -3% admissions for LTC (Ahn et al, 2013) ■ -10 percentage points (Imison et al, 2017) COPD ■ −0.15 hospital stays/patient (McManus) ■ -40% hospital stays (Bourbeau et al, 2013) ■ Odds Ratio 0.69 (Howcroft et al, 2016)[39] ■ Odds Ratio 0.57 (Zwerink, 2014)
Patient wellbeing	■ +0.28 QoL score (Panagioti et al, 2014) ■ 0 to +0.2 QoL score (Crowe et al, 2016) COPD ■ +0.020 QoL score (Richardson et al, 2008) ■ -3.51 (Zwerink et al, 2014)	

11.2 Illustrative model of effects

The effects presented below are purely illustrative. The reasons why the model is illustrative are:

- The evidence reviewed shows the effects of a wide range of interventions, which although analogous to the changes made to the delivery of LTC care in Dudley are not straightforwardly comparable.

[39] An **odds ratio** is a measure of association between an event and an outcome. In this case, improvements in monitoring and management and hospital utilisation. An odds ratio of less than one implies the outcome becomes **less likely.**

- The interactions between the effects of improved management, improved patient wellbeing and improved monitoring on healthcare utilisation has not been explored. The impact of improved well-being on healthcare utilisation has not been included in the model.
- The size of the impacts identified in different studies is variable.
- It has not been possible to assess the effects of better management on life expectancy, and the effect this will have on healthcare utilisation in each year. Therefore the model only examines changes in the short term (presenting an annual effect).

The model uses findings from the evidence review alongside information from standard NHS and ONS sources for:

- The monetary value of GP appointments, A&E attendances and emergency admissions;
- The prevalence of LTCs in Dudley;
- The average number of healthcare contacts made by a patient with a LTC in each year; and
- The size of the population in Dudley.

More details about the data and the assumptions are presented in Annex 5.

Table 11.2 presents an illustration of how the introduction of the LTCF could affect utilisation across the wider healthcare system in Dudley. The model works by estimating the total value of healthcare provided to patients with LTCs in Dudley in each year. The model uses assumptions for the average number of healthcare contacts made by a patient with a LTC in each year (this has been estimated to be 7.5 GP appointments per year[40]). This is multiplied by the number of patients with the LTC and the average cost of the healthcare contact to estimate the total monetary value to the health service.

In column one, the baseline scenario, the number of healthcare contacts per patient with a LTC is not adjusted from the assumed values. This then gives the value of healthcare provided to patients with LTCs in the absence of the LTCF.

In column two, the number of healthcare contacts has been altered using information from the evidence review about the effects of monitoring and management on healthcare utilisation. All other calculations and assumptions remain the same as described above.

The illustrative results show that by improving management through the LTCF, the annual value of healthcare provided to patients with LTCs in Dudley would decrease. These are likely to be opportunity costs (staff substituting their time to other tasks) rather than cashable savings. For more details about the model, see Annex 5. The illustrative case assumes that, based on the literature described above, introducing the LTCF will:

- Reduce GP appointments by 1.3% through the direct effects of monitoring and better management;
- Reduce hospital admissions by 4% through the effects of monitoring and management;

[40] http://digital.nhs.uk/catalogue/PUB01077

- Reduce A&E attendances by 2.5% through direct monitoring and management; and
- Improve patient wellbeing by 1.2%.

Table 11.2 Illustrative model of the effect of monitoring on healthcare utilisation in Dudley

	Column 1	Column 2
	Baseline	After LTCF introduction
Number of patients with LTCF	141,200	141,200
Level of wellbeing (measured from 0 to 1)	0.72	0.73
Primary care appointments per patient / year	7.5	7.4
A&E attendances per patient / year	0.84	0.82
Secondary care admissions per patient / year	0.55	0.53
Total value of healthcare provided	£371.3 million	£362.4 million
Potential saving		£8.9 million
% saving		2.4%

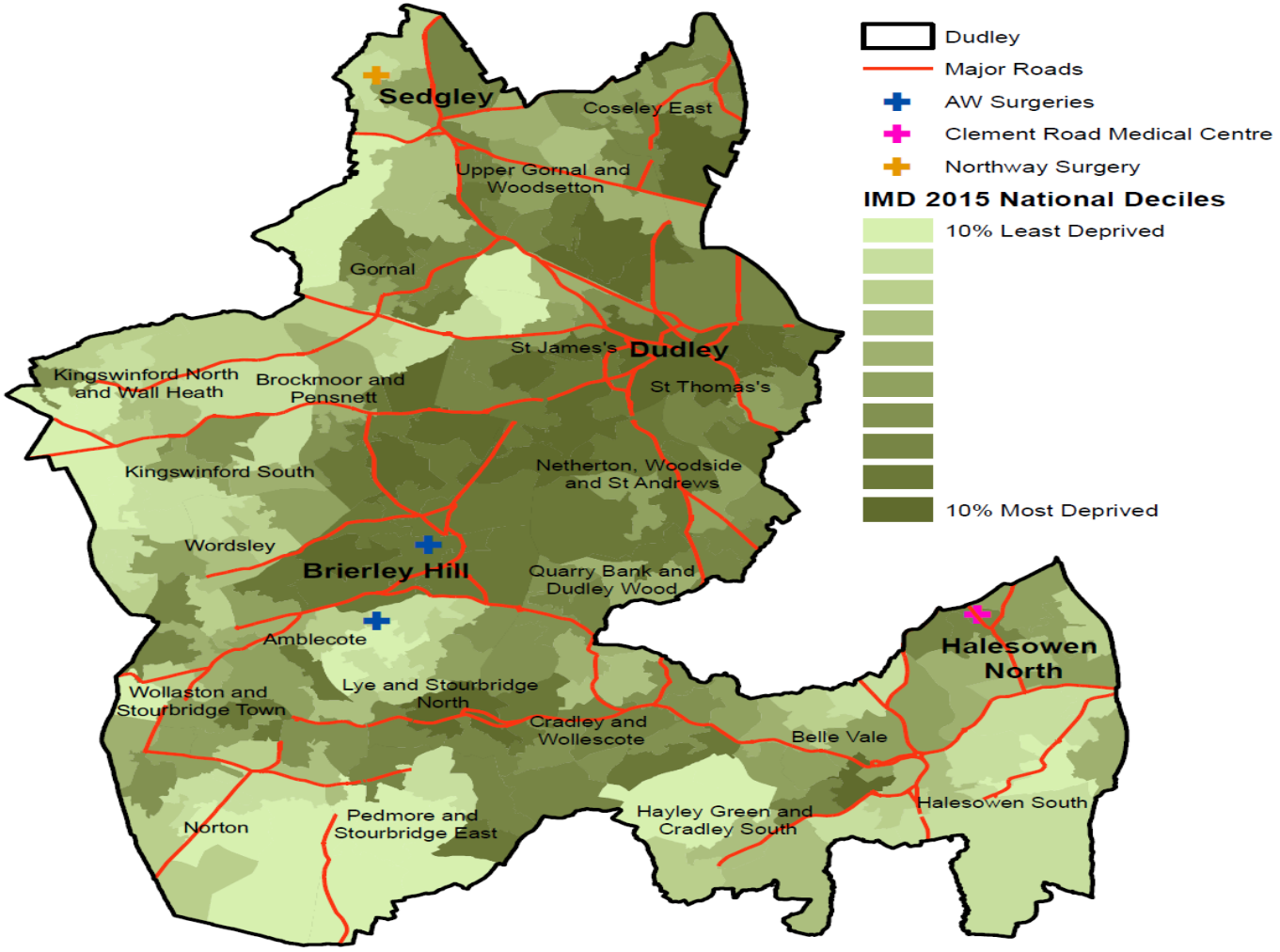
The results in Table 11.2 illustrate the potential impact of improved monitoring and management of LTC in Dudley. The model uses a series of assumptions about the behaviour and healthcare utilisation (see Annex 5), which are based on the evidence available. Altering these assumptions will provide different estimates of the savings to the wider health system of introducing the LTCF.

For example, if it is assumed that there is no significant impact on healthcare utilisation (as indicated in a number of studies), there would be no saving to the healthcare system. If the assumption of the effect of management on GP appointments, hospital admissions and A&E attendances were increased to 2.5%, 6% and 4% respectively, the potential savings would be £14 million (3.9%).

The results presented in Table 11.2 should be viewed as illustrative, rather than as expected savings from the introduction of the LTCF.

Part A: ANNEXES

Annex 1 Map of case study practices



Annex 2 Sensitivity analysis

The results of the sensitivity analysis are presented here. These results show the effect of altering the assumptions of the duration of appointments, travel times and the cost of staff time. A complete of the assumptions and values used in the sensitivity analysis is presented in Annex 3.

A2.1 AW Surgeries

Table A2.1 shows the results of the sensitivity analysis for AW Surgeries. This shows that there is a wide variety in the difference in duration of staff time used to deliver care to patients with LTCs (from 1,100 to 1,700 hours). However, the difference in patient time is much lower (400 to 500 hours). This is because there is a large amount of additional administration time used at AW Surgeries under the LTCF framework and less certainty about the duration of tasks. The cost to the health service of providing care is lower for the LTCF care pathways than for the QOF care pathways in the low, central and high estimates. This indicates that the true cost of the care pathway is lower under the LTCF framework than under the QOF framework. There is little variation the cost to the economy and cost of list leisure time at AW Surgeries.

Table A2.1 Sensitivity analysis showing the difference between the QOF and LTCF care pathways, AW Surgeries

	Low	Central	High
GP practice staff time (hours)	1,100	1,300	1,700
Patient time (hours)	400	400	500
Annual GP practice cost	-£19,000	-£41,000	-£66,000
Annual cost to economy	£7,000	£7,000	£8,000
Annual loss of leisure time	£4,000	£4,000	£5,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

A2.2 Northway Surgery

Table A2.2 shows the results of the sensitivity analysis for Northway Surgery. This shows that there is little change in the difference between the QOF and LTCF care pathways in:

- The duration of staff time used to deliver care to patients with LTCs;
- The duration of patient time;
- The cost to the economy; and
- The cost of loss of leisure time.

The cost to the health service of providing care is lower for the LTCF care pathways using the high cost assumptions, but the difference in cost is negligible under the central assumptions and the costs are higher in the LTCF care pathways using the low assumptions. This is due to the differences in the unit cost of the staff used in the care pathway (the change in skill mix of the staff delivering the care and the assumed unit cost in each scenario).

Table A2.2 Sensitivity analysis showing the difference between the QOF and LTCF care pathways, Northway surgery

	Low	Central	High
GP practice staff time (hours)	200	200	200
Patient time (hours)	-100	-100	-100
Annual GP practice cost	£2,000	£0	-£4,000
Annual cost to economy	-£2,000	-£2,000	-£2,000
Annual loss of leisure time	-£1,000	-£1,000	-£1,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

A2.3 Clement Road

Table A2.3 shows the results of the sensitivity analysis for Clement Road Surgery. The changes in hours and costs at Clement Road follow the expected trend, all are highest in the high estimates. This is because there has been no change in the skill mix of staff or the duration of appointments between the QOF and LTCF care pathways, meaning the changes in the unit cost for staff and duration of appointments are directly reflected in the estimated values.

Table A2.3 Sensitivity analysis showing the difference between the QOF and LTCF care pathways, Clement Road

	Low	Central	High
GP practice staff time (hours)	200	300	400
Patient time (hours)	500	700	700
Annual GP practice cost	£18,000	£30,000	£50,000
Annual cost to economy	£5,000	£7,000	£9,000
Annual loss of leisure time	£3,000	£4,000	£4,000

ICF analysis. All estimations of duration are rounded to the nearest 100 hours, and monetary estimations are rounded to the nearest £1,000. Therefore the sum of the condition columns may not sum to the presented total due to rounding.

Annex 3 Data sources and values

Table A3.1 Standard data used in cost estimates

Category	Low	Central	High	Source
Cost of staff time				
Cost of receptionist time (per hour)	£24.30	£27.00	£29.70	PSSRU; assumed to be a Band two post
Cost of Healthcare Assistant time (per hour)	£13.21	£14.68	£16.15	PSSRU; assumed to be a Band three post
Cost of Practice Nurse time (per hour)	£46.80	£52.00	£59.00	PSSRU; assumed to be a Band seven post
Cost of Advanced Nurse Practitioner time (per hour)	£54.90	£61.00	£68.00	PSSRU; assumed to be a Band eight a post
Cost of GP time (per hour)	£179.00	£199.00	£236.00	PSSRU
Cost of Community Care Nurse time (per hour)	£26.10	£29.00	£34.00	PSSRU; assumed to be a Band four post
Waiting time				
Duration of waiting time	12 minutes	12 minutes	12 minutes	GP patient survey
Travel time				
Time to travel from home to GP practice	7 minutes	8 minutes	9 minutes	Department for Transport Journey Time Statistics
Time to travel from GP practice to work	19 minutes	21 minutes	23 minutes	Department for Transport Journey Time Statistics; Labour Force Survey
Time to travel from home to Community Care setting	9 minutes	13 minutes	16 minutes	Department for Transport Journey Time Statistics; Community Care setting assumed to be in town centre
Time to travel to Community Care setting to work	6 minutes	6 minutes	7 minutes	Department for Transport Journey Time Statistics; Labour Force Survey; Community Care setting assumed to be in town centre
Employment rate				
Employment rate	37.6%	37.6%	37.6%	Annual Population Survey
Value of time				
Value of time – employed individual	£25.13	£25.13	£25.13	Regional GVA estimates
Value of time – non-employed individual	£9.69	£9.69	£9.69	Department for Transport

Table A3.2 AW Surgeries specific data used in cost estimations (all information collected from case study interviews)

Category	Low	Central	High
QOF - Diabetes			
Recalls identified through IT search	5 mins	7 mins	8 mins
Search list is reviewed for those who are due for an appointment			
A letter is completed that details the tests that a patient needs to have and to get in touch with the surgery to arrange the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Patient calls up to make appointment	1 min	2 mins	3 mins
If patient cannot be contacted, they are chased by phone	1 min	2 min	3 mins
Test appointment	8 mins	10 mins	12 mins
Foot check, blood pressure, diet and lifestyle	12 mins	15 mins	20 mins
Review of bloods, BP and medication alongside general discussion	12 mins	18 mins	25 mins
Six monthly review reviewing medication and status	15 mins	20 mins	25 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
QOF - COPD			
Recalls identified through IT search	5 mins	7 mins	8 mins
Search list is reviewed for those who are due for an appointment			
A letter is completed that asks the patient to get in touch with the surgery to arrange the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Patient calls up to make appointment	1 min	2 mins	3 mins
If patient cannot be contacted, chased by phone	1 min	2 min	3 mins
Annual review appointment - spirometry test, review of status and medication alongside general discussion	20 mins	30 mins	35 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
QOF – hypertension			
GP review of patient with hypertension	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins

Category	Low	Central	High
LTCF - Diabetes			
Spreadsheet is reviewed daily for patients due for a review	20 mins	30 mins	35 mins
Patient identified, details checked and matched up with a nurse with appropriate skills			
A text is sent out to invite patient to appointment			
Patient calls up and they book an appointment	1 min	2 mins	3 mins
If patient doesn't respond, they are chased by phone	1 min	2 mins	3 mins
Test appointment	8 mins	10 mins	12 mins
GP reviews patient list at start of the clinic day	1.5 mins	2 mins	4 mins
Foot check, blood pressure, diet and lifestyle	12 mins	15 mins	20 mins
Review of bloods and BP, holistic check, general discussion and care plan	20 mins	30 mins	40 mins
Six monthly review	25 mins	30 mins	35 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF - COPD			
Spreadsheet is reviewed daily for patients due for a review	20 mins	30 mins	35 mins
Patient identified, details checked and matched up with a nurse with appropriate skills			
A text is sent out to invite patient to appointment			
Patient calls up and they book an appointment	1 min	2 mins	3 mins
If patient doesn't respond, they are chased by phone	1 min	2 mins	3 mins
Test appointment	8 mins	10 mins	12 mins
GP reviews patient list at start of the clinic day	1.5 mins	2 mins	4 mins
Discussion of diet and exercise, general checks - height and weight, BP	12 mins	15 mins	20 mins
Review of BP, spirometry test, holistic check, general discussion and care plan	20 mins	30 mins	35 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF – Hypertension			
Spreadsheet is reviewed daily for patients due for a review	20 mins	30 mins	35 mins
Patient identified, details checked and matched up with a nurse with appropriate skills			

Category	Low	Central	High
A text is sent out to invite patient to appointment			
Patient calls up and they book an appointment	1 min	2 mins	3 mins
If patient doesn't respond, they are chased by phone	1 min	2 mins	3 mins
GP reviews patient list at start of the clinic day	1.5 mins	2 mins	4 mins
Annual review of BP, diet and lifestyle, care plan	15 mins	20 mins	25 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF – Combination of conditions			
Spreadsheet is reviewed daily for patients due for a review	20 mins	30 mins	35 mins
Patient identified, details checked and matched up with a nurse with appropriate skills			
A text is sent out to invite patient to appointment			
Patient calls up and they book an appointment	1 min	2 mins	3 mins
If patient doesn't respond, they are chased by phone	1 min	2 mins	3 mins
Test appointment	8 mins	10 mins	12 mins
GP review of patient list at start of day	1.5 mins	2 mins	4 mins
Foot check, blood pressure, diet and lifestyle	12 mins	15 mins	20 mins
Review of BP, bloods, spirometry test (COPD) holistic check, general discussion and care plan	20 mins	30 mins	40 mins
Six monthly review	25 mins	30 mins	35 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins

Table A3.3 Northway surgery specific data used in cost estimations (all information collected from case study interviews)

Category	Low	Central	High
QOF - Diabetes			
Recalls identified through IT search	4 mins	7 mins	9 mins
Search list is reviewed for those who are due for an appointment			
A letter is completed that details tests that a patient needs to have, where and when as well as the date and time for their review			

Category	Low	Central	High
Letter is put in an envelope and it's posted to patient			
Test appointment	8 mins	10 mins	12 mins
Foot check, blood pressure, diet and lifestyle	13 mins	15 mins	18 mins
Review of bloods, BP and medication alongside general discussion	13 mins	15 mins	17 mins
Six monthly review reviewing medication and status	10 mins	15 mins	20 mins
One afternoon a month from a diabetes nurse specialist	3 mins	5 mins	6 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
QOF - COPD			
Recalls identified through IT search	4 mins	7 mins	9 mins
Search list is reviewed for those who are due for an appointment			
A letter is completed that asks the patient to get in touch with the surgery to arrange the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Annual review appointment - spirometry test, review of status and medication alongside general discussion	20 mins	30 mins	40 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
QOF – hypertension			
Recalls identified through IT search	4 mins	7 mins	9 mins
Search list is reviewed for those who are due for an appointment			
A letter is completed that asks the patient to get in touch with the surgery to arrange the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Annual review appointment	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF - Diabetes			
Search list is reviewed for those who are due for an appointment	10 mins	13 mins	15 mins
A letter is completed that details tests that a patient needs to have, where and when as well as the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Test appointment	8 mins	10 mins	12 mins

Category	Low	Central	High
Annual review: Foot check, blood pressure, diet and lifestyle, review of bloods and medication, care planning	25 mins	30 mins	40 mins
Six monthly review	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF – COPD			
Search list is reviewed for those who are due for an appointment	10 mins	13 mins	15 mins
A letter is completed that details tests that a patient needs to have, where and when as well as the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Review of BP, spirometry test, holistic check, general discussion and care plan	20 mins	30 mins	40 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF – Hypertension			
Search list is reviewed for those who are due for an appointment	10 mins	13 mins	15 mins
A letter is completed that details tests that a patient needs to have, where and when as well as the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Blood pressure check, discussion of diet and lifestyle, care planning	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF – Combination of conditions			
Search list is reviewed for those who are due for an appointment	10 mins	13 mins	15 mins
A letter is completed that details tests that a patient needs to have, where and when as well as the date and time for their review			
Letter is put in an envelope and it's posted to patient			
Test appointment	8 mins	10 mins	12 mins
Annual review: Foot check, blood pressure, diet and lifestyle, spirometry test, review of bloods and medication, care plan	40 mins	45 mins	50 mins
Six monthly review	10 mins	15 mins	20 mins
Annual review for patients with hypertension and diabetes / hypertension and COPD	25 mins	30 mins	35 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
Additional time (not linked to a single care pathway)			
A list is run each month identifying patients who are due for a review - based on birth month	3.5 hours / month	4 hours / month	4.5 hours / month

Table A3.4 Clement Road Surgery specific data used in cost estimations (all information collected from case study interviews)

Category	Low	Central	High
QOF - Diabetes			
Recalls identified through IT search	4 mins	5 mins	6 mins
Search list is reviewed for those who are due for an appointment			
Text sent to patient			
Patient calls up to make appointment	2 mins	3 mins	4 mins
If patient cannot be contacted, they are chased by phone	2 mins	3 mins	4 mins
Test appointment	8 mins	10 mins	12 mins
Foot check, blood pressure, diet and lifestyle	20 mins	30 mins	40 mins
Six monthly review reviewing medication and status	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
QOF - COPD			
Recalls identified through IT search	5 mins	6 mins	7 mins
Search list is reviewed for those who are due for an appointment			
Text sent to patient			
Patient calls up to make appointment	1 min	2 mins	3 mins
If patient cannot be contacted, they are chased by phone	1 min	2 mins	3 mins
Annual review appointment - spirometry test, review of status and medication	20 mins	30 mins	40 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
QOF – hypertension – no care pathway			
LTCF - Diabetes			
The lists of patients are reviewed every month to see who is due for a review	2 mins	3 mins	4 mins
Text is sent to patient to invite them to make an appointment	2 mins	3 mins	4 mins
Patient rings surgery to make appointment			
If patient doesn't respond, they are chased by phone	2 mins	2 mins	3 mins
Test appointment	8 mins	10 mins	12 mins

Category	Low	Central	High
Foot check, blood pressure, diet and lifestyle discussion, review of bloods, care planning	20 mins	30 mins	40 mins
Six monthly review	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF - COPD			
The lists of patients are reviewed every month to see who is due for a review	2 mins	3 mins	4 mins
Text is sent to patient to invite them to make an appointment	2 mins	2 mins	4 mins
Patient rings surgery to make appointment			
If patient doesn't respond, they are chased by phone	2 mins	2 mins	3 mins
Blood pressure, spirometry tests, diet and lifestyle discussion, care planning	20 mins	30 mins	40 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins
LTCF – Hypertension			
The lists of patients are reviewed every month to see who is due for a review	2 mins	3 mins	4 mins
Text is sent to patient to invite them to make an appointment	2 mins	3 mins	4 mins
Patient rings surgery to make appointment			
If patient doesn't respond, they are chased by phone	2 min	2 mins	3 mins
Blood pressure, lifestyle and diet checked, care planning	10 mins	15 mins	20 mins
Medication review by phone or face to face	7 mins	10 mins	15 mins

Part B: ANNEXES

Annex 4 Literature review methodology

The literature review was undertaken in two stages. The first stage was to identify a longlist of sources for inclusion in the main review. The second stage was to then review the sources identified, assess their relevance level, and capture detailed information on a short list of sources using a data extraction template.

A4.1 Inclusion criteria

An initial set of inclusion criteria were established to ensure relevant documents were identified. The inclusion criteria are set out below:

- Year of publication – due to the high quantity of search results, the initial search was limited to studies published in the last ten years (since 2007), although a few additional older references (for specific LTCs) were later identified as also being particularly relevant based on the review of existing sources;
- Research design – due to the nature of the information required and the extent of literature in the field, the search focused on studies that provided quantitative information on topic with a robust research methodology, primarily systematic reviews;
- Nature of health conditions – research was only deemed relevant where it assessed chronic or LTCs including multi-morbidity, with a particular focus on studies that included patients with diabetes, hypertension and/or COPD.
- English language studies.

A4.2 Literature search

Literature was identified through searching for journal articles in EBSCO and the Cochrane database. This journal search was supplemented with a broader web search and a review of key stakeholder websites (such as the Health Foundation, the Kings Fund and the Nuffield Foundation) to identify any further documents for review.

The literature review focused on the effect of a broad range of interventions comparable to changes promoted as part of the implementation of LTCF. These changes include a focus on care planning and goal setting, supported self-management and a more holistic approach to the management of LTCs.

The selected number of search terms were:

- Self-care / self-management / self-efficacy /shared decision making and behaviour change
- Behaviour change and healthcare utilisation / use of health services
- Self-care / self-management /self-efficacy / shared decision making and healthcare utilisation / use of health services
- Impact of initiatives / programmes / projects to improve management of long term/chronic conditions
- Care plans/care planning and behaviour change / use of health services.

To ensure transparency during the literature review all search terms were recorded, the number of results generated and the number of relevant results generated, as set out in Table A4.1.

Table A4.1 Literature search term results

Search term	Resource examined	No. of results generated	No. of relevant results generated	No. did not cover topic	No. of duplicates
"Self-care" and "behaviour change"	Cochrane	249	7	4	3
"self-management" and "behaviour change"	Cochrane	174	3	1	3
"self-efficacy" and "behaviour change"	Cochrane	408	2	4	2
"shared decision making" and "behaviour change"	Cochrane	3	0	3	0
"behaviour change" and "healthcare utilisation"	Cochrane	4	0	4	0
"behaviour change" and "use of health services"	Cochrane	4	0	4	0
"Self-care" and "healthcare utilization"	Cochrane	49	8	41	8
"Self-care" and "use of health services"	Cochrane	21	2	19	2
"self-management" and "healthcare utilization"	Cochrane	44	8	36	2
"self-management" and "use of health services"	Cochrane	15	4	11	4
"self-efficacy" and "healthcare utilization"	Cochrane	26	1	25	0
"self-efficacy" and "use of health services"	Cochrane	13	3	10	0
"shared decision making" and "healthcare utilization"	Cochrane	3	0	3	0
"shared decision making" and "use of health services"	Cochrane	0	0	0	
"programmes" and "long term conditions"	Cochrane	42	10	32	3
"programmes" and "chronic conditions"	Cochrane	229	9	220	5
"initiatives" and "long term conditions"	Cochrane	7	2	5	0
"initiatives" and "chronic conditions"	Cochrane	16	1	15	0
"projects" and "long term conditions"	Cochrane	13	1	12	0
"projects" and "chronic conditions"	Cochrane	61	1	60	0
"care plans" and "behaviour change"	Cochrane	51	4	47	4

"care plans" and "use of health services"	Cochrane	4	2	2	2
"care planning" and "behaviour change"	Cochrane	47	4	43	0
"care planning" and "use of health services"	Cochrane	4	2	2	1
"Self-care" and "behaviour change"	EBSCO	464	-	-	
"self-management" and "behaviour change"	EBSCO	443	-	-	
"self-efficacy" and "behaviour change"	EBSCO	812	-	-	
"shared decision making" and "behaviour change"	EBSCO	25	1	24	12
"behaviour change" and "healthcare utilisation"	EBSCO	2	0	2	
"behaviour change" and "use of health services"	EBSCO	5	0	5	
"Self-care" and "healthcare utilization"	EBSCO	131	13	118	
"Self-care" and "use of health services"	EBSCO	66	12	54	17
"self-management" and "healthcare utilization"	EBSCO	139	-	-	
"self-management" and "use of health services"	EBSCO	67	4	63	
"self-efficacy" and "healthcare utilization"	EBSCO	71	3	68	
"self-efficacy" and "use of health services"	EBSCO	43	2	41	19
"shared decision making" and "healthcare utilization"	EBSCO	4	2	2	1
"shared decision making" and "use of health services"	EBSCO	4	2	2	1
"programmes" and "long term conditions"	EBSCO	166	3	163	
"programmes" and "chronic conditions"	EBSCO	609	6	244	
"initiatives" and "long term conditions"	EBSCO	100	3	97	
"initiatives" and "chronic conditions"	EBSCO	534	1	99	
"projects" and "long term conditions"	EBSCO	83	1	82	
"care plans" and "behaviour change"	EBSCO	76	2	74	

"care plans" and "use of health services"	EBSCO	5	0	5	
"care planning" and "behaviour change"	EBSCO	41	4	37	13
"care planning" and "use of health services"	EBSCO	6	2	4	

A4.3 Collating the findings from the literature

Information from the literature was collated in a data extraction tool. This collected information on the study findings and the research methodology (the latter being necessary to assess the quality of the literature). The study findings section collected information on:

- Study purpose - the aims and objectives of the research, thematic and geographic coverage of the research, and the intended study outcomes;
- Study results - the results of the study, including whether they were statistically significant and if there was evidence of bias;
- Review of methodology – the type of methodological approach used, the sample size and sampling methodology and an assessment of research quality based on the strengths and weaknesses of the methodology;
- Appropriateness of methodology for modelling – an assessment of whether the findings from the study or the methodology could be used in modelling work in the future.

Annex 5 Data and assumptions used to estimate monetary value of wider system changes

Table A5.1 Data and assumptions used to estimate potential changes in wider health service utilisation

Item	Value	Source
Population of Dudley (16+)	256,800	Mid-year Population estimates, ONS
Percentage of the population with a LTC	55%	GP patient survey
Number of people with a LTC	141,200	
Average number of GP appointments per person with LTC	7.5 / year	QResearch (Rate per person per year for adults aged over 20)
Average hospital admission for person with LTC	0.6 / year	Hospital Admitted Patient Care Activity; Assumption that 70% of admissions are for people with LTC (NHS England, based on bed days)
Average A&E attendance for person with LTC	0.8 / year	Annual A&E statistics; Assumption that 70% of admissions are for people with LTC (NHS England, based on bed days)
Effect of monitoring / management on GP appointments	-1.3%	Assumption based on literature review findings; as there were a wide range of values presented in the literature a conservative assumption has been used.
Effect of monitoring / management on hospital admissions	-4%	Assumption based on literature review findings; as there were a wide range of values presented in the literature a conservative assumption has been used.
Effect of monitoring / management on A&E attendances	-2.5%	Assumption based on literature review findings; as there were a wide range of values presented in the literature a conservative assumption has been used.
Cost of GP appointment	£38	PSSRU, Unit Cost of Health and Social Care
Cost of hospital admission	£2,700	NHS Tariff data
Cost of A&E attendance	£125	NHS Tariff data

To assess the effectiveness of the LTCF, an impact evaluation would need to be undertaken. We would recommend that this uses sophisticated statistical techniques. The approaches we would recommend using are:

- **A Difference-in-Difference approach.** This would involve identifying a comparator area, similar to Dudley (potentially other areas within the Black Country) where the care pathways have not been altered. The number of hospital admissions, A&E attendances and GP appointments in the two areas can be modelled, with dummy variables for before and after the introduction of the LTCF added to the dataset. Any other factors, which may affect healthcare utilisation can be included in the statistical model. The difference in the change in appointments in Dudley and in the comparator area can be identified as the impact of the LTCF. It may be possible to disaggregate by condition of admission, depending on the quality of the data.
- **A Regression Discontinuity Analysis.** This would use time series data for the number of hospital admissions, A&E attendances and GP appointments in

Dudley. A dummy variable is introduced for when the LTCF was introduced. Variables for all other factors, which could affect healthcare utilisation should be included in the model. The data can then be used in a statistical model. The impact of the LTCF can be identified from the statistical model.

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