Spend to save: The economic case for improving access to general practice
A report for the Royal College of General Practitioners

November 2014
Rationale and Methodology
## Contents

Important Notice from Deloitte

Executive Summary 1

1 Introduction 3

2 The role of general practice and current challenges 6

3 Key findings 10

4 Conclusions and recommendations 21

Appendix A Bibliography 23

Appendix B Modelling approach 25

Appendix C Case study on diabetes 52

Appendix D Shorter case studies 59
Important Notice from Deloitte

This final report (the ‘Final Report’) has been prepared by Deloitte LLP (‘Deloitte’) for the Royal College of General Practitioners (RCGP) in accordance with the contract with them dated 30 August 2014 (‘the Contract’) and on the basis of the scope and limitations set out below.

The Final Report has been prepared solely for the purposes of estimating the potential financial impact of improving access to general practice, as set out in the Contract. It should not be used for any other purpose or in any other context, and Deloitte accepts no responsibility for its use in either regard including their use by the RCGP for decision making or reporting to third parties.

The Final Report is provided exclusively for the RCGP’s use under the terms of the Contract. No party other than the RCGP is entitled to rely on the Final Report for any purpose whatsoever and Deloitte accepts no responsibility or liability or duty of care to any other party other than the RCGP in respect of the Final Report or any of its contents.

As set out in the Contract, the scope of our work has been limited by the time, information and explanations made available to us. The information contained in the Final Report has been obtained from the RCGP and third party sources that are clearly referenced in the appropriate sections of the Final Report. Deloitte has neither sought to corroborate this information nor to review its overall reasonableness. Further, any results from the analysis contained in the Final Report are reliant on the information available at the time of writing the Final Report and should not be relied upon in subsequent periods.

Accordingly, no representation or warranty, express or implied, is given and no responsibility or liability is or will be accepted by or on behalf of Deloitte or by any of its partners, employees or agents or any other person as to the accuracy, completeness or correctness of the information contained in this document or any oral information made available and any such liability is expressly disclaimed.

All copyright and other proprietary rights in the Final Report remain the property of Deloitte LLP and any rights not expressly granted in these terms or in the Contract are reserved.

This Final Report and its contents do not constitute financial or other professional advice, and specific advice should be sought about your specific circumstances. In particular, the Final Report does not constitute a recommendation or endorsement by Deloitte to invest or participate in, exit, or otherwise use any of the markets or companies referred to in it. To the fullest extent possible, both Deloitte and the RCGP disclaim any liability arising out of the use (or non-use) of the Final Report and its contents, including any action or decision taken as a result of such use (or non-use).
Executive Summary

General practice has a crucial role to play within the NHS, it is the cornerstone of the health care system. It acts as the main point of contact for the general public, with 90% of patient contact with the NHS taking place in general practice. General practitioners’ (GPs) role includes diagnosis, management of pre-existing conditions, acting as a ‘navigator’ or ‘hub’ to secondary care, co-ordinating care, screening and health promotion.

There is a growing consensus the NHS needs to focus on the development of preventative models of care. This is driven by the on-going financial challenges facing the health care system, with rising demand and relatively flat funding in real terms. Such approaches focus on proactive rather than reactive management of patients with long term conditions and multi-morbidities. GPs are at the centre of care provided in the community, where they are able to influence the level of demand for other care settings.

Whilst the importance of general practice is widely recognised, it has seen a significant reduction in funding in the last five years. Previous research undertaken by Deloitte shows that the share of NHS funding going to general practice has fallen from 10.3% in 2004/5 to 8.39% in 2011/12. This reduction in funding has placed a strain on general practice, with 80% of GPs stating that they had insufficient resources to provide high quality patient care in 2013.

Against this background there have been calls for GPs to take on increased responsibilities, in particular, the provision of extended hours. The Royal College of General Practitioners (RCGP) has commissioned Deloitte to undertake a study evaluating the potential financial impact of improving access to general practice. The study finds that directing additional funding to general practice could generate significant savings to the NHS across the UK. In particular:

- In the short term, improved access to general practice has the potential to reduce significantly the demand for secondary care, specifically A&E attendances. This could potentially lead to further savings from reduced social admissions and ambulance call outs. It is estimated that these short term savings could amount to £315 - £447 million per year in the UK.

- In the medium term, improved access to general practice could support patients to take a more pro-active approach to managing their conditions. This is estimated to have the potential to lead to an 8 - 11% reduction in avoidable admissions (that is, admissions for ambulatory care sensitive conditions). This translates to a potential annual saving of £148 - 333 million in the UK.

- In the long term, general practice could have an impact on the prevalence of particular conditions by targeting lifestyle factors. This could generate savings for the NHS in terms of reduced expenditure on particular conditions. Examples of these lifestyle factors include smoking, alcohol consumption and exercise. It is estimated that general practice has the potential to generate savings of £68 - 110 million per year in the long term in the UK through increased smoking cessation and £47 - 70 million through reduced alcohol consumption.

---

3 Deloitte. 2014. Under pressure: The funding of care in general practice. The RCGP estimates that the share of NHS funding to general practice was 8.3% in 2012/13 in the UK.
5 This figure is computed using the total number of admissions in the UK, stratified by patient sub-groups.
6 This figure is computed using the total number of admissions in the UK, stratified by patient sub-group.
In total, these savings amount to £580 - £960m per year. This study finds that improved access to general practice has the potential to generate significant financial savings to the NHS along with improved patient experience. Alongside this, improving access to general practice could help address some of the key challenges currently faced by the health care system as a whole. To inform the findings a number of assumptions have been made, in determining these assumptions we have sought to take a reasonable approach that focuses on savings that can be robustly quantified. It is important to note that there may be additional savings that it has not been possible to quantify given practical limitations of the study, for example data availability.

In order to bring about these benefits, general practice will require additional funding. Policy makers need to consider the share of NHS funding that is allocated to general practice alongside the ever increasing role of general practice within the NHS. Additionally, it is important to consider mechanisms for bringing about additional investment in general practice, given wider developments such as co-commissioning and changes to the NHS re-imbursement system.

**Figure 1: Overall summary of estimated financial impacts of improved access to general practice**

- **General practice**
  General practice is the entry point to the healthcare system, making the most medical diagnosis in the NHS

- **Total savings**
  Significant savings could be achieved through improved access to general practice, as much as £960 million per year in the UK.

- **Short term impacts**
  In the short term, improved access to general practice could support a shift in the setting of care from reduced A&E attendances and social admissions, leading to savings of £315 - £447 million per year in the UK.

- **Medium term impacts**
  General practice can significantly contribute to managing ACSC conditions in the medium term, leading to savings of £148 - £333 million per year in the UK.

- **Long term impacts – smoking**
  In the long term, general practice can effectively target lifestyle risk factors and could save £68 - £110 million per year from smoking-related issues.

- **Long term impacts – alcohol consumption**
  In the long term, general practice can effectively target lifestyle risk factors, such as excessive alcohol consumption and could save £47 - £70 million per year.

---

**Reduced A&E attendance and social admissions**
£315 - £447 million per year

**Reduced ACSCs admissions**
£148 - £333 million per year

**Decreased alcohol consumption**
£47 - £70 million per year

**Smoking reduction**
£68 - £110 million per year in the long term
1 Introduction

1.1 Background
General practice has a crucial role to play within the NHS. There is a growing consensus that there is the need for preventative models of care, focusing on proactive, rather than reactive management of patients with long term conditions and multi-morbidities. This is driven by the ongoing financial challenges facing the NHS, i.e. relatively flat funding in real terms, compounded by a rapid growth in demand.

General practice is well suited to managing the care of patients with long term conditions and multi-morbidities, given that it focuses on the patient as a whole, rather than on specific conditions. Additionally, there is a growing body of literature which notes that general practice has a strong role to play in managing patients with both physical and mental health problems. Given the changing demographic structure of the UK, the number of patients with both types of condition is likely to increase over time.

Whilst there is evidence around the positive role of general practice, there has been a significant reduction in the share of NHS funding received by general practice in the last ten years. Previous research undertaken by Deloitte shows that the share of NHS funding to general practice has gone from 10.3% in 2004/5 to 8.39% in 2011/12. Furthermore, the same study found that funding for general practice is due to fall by 17% in real terms by 2017/18. Reduced funding in general practice has coincided with a significant increase in the demand for general practice, with a 19% growth in the number of patient consultations from 2008/9 to 2013/14 in the UK.

Whilst the share of NHS funding to general practice has fallen over time, numerous public stakeholders have called for general practice to do more. In particular, there has been a public focus on increased provision of extended hours in general practice across the UK:

- Scotland: The Scottish Government launched a £1m scheme in 2013 to test new and innovative models of primary care, as part of a wider modernisation programme.
- England: The Prime Minister’s Challenge Fund was established in 2013 to support pilots of extended practice opening hours in 20 local health economies in England. The fund put forward £50m of funding to support these initiatives and at the time of publication the Prime Minister announced plans to provide additional funding to support further expansion of extended hours provision.
- Wales: Increasing access to general practice services has been among the key commitments of the Programme for Government, launched in 2011 by the Welsh Government.
- Northern Ireland: The independent Patient and Client Council in Northern Ireland has recently called for GPs to operate extended hours.

Against this backdrop, the Royal College of General Practitioners (RCGP) has commissioned Deloitte to undertake a study evaluating the financial savings that could be generated by improving access to general practice. In particular, this study seeks to evaluate the financial impacts of improving access to general practice and to encourage policy makers to consider the allocation of NHS resources across care settings.

7 For example, see: The King’s Fund. 2010. Managing people with long-term conditions.
8 Deloitte. 2014. Under Pressure: The funding of patient care in general practice. The RCGP estimates that that the share of NHS funding to general practice was 8.3% in 2012/13.
9 Ibid.
10 Within this study we define ‘extended hours’ as non-urgent care provided outside of the core hours outlined in the GP contract. This is distinct from out of hours GP services for urgent care needs.
12 British Medical Journal. 2014. Cameron reiterates promise of seven day access to GPs. http://www.bmj.com/content/349/bmj.g5960
1.2 Approach and methodology
This section presents the approach and methodology used to undertake this study. The methodology consists of three strands:

• Literature review. There is significant literature available on the effect of improved access to general practice, in the short, medium and long term. A literature review has been undertaken (covering both the UK and international literature) to understand the key financial savings that could be generated through general practice and to inform the modelling approach that has been employed. Additionally, literature has been used to identify a number of case studies which are presented in this report. These case studies illustrate the positive impact that general practice can have on patients and the wider NHS. A summary of the literature that has been reviewed is presented in Appendix A.

• Modelling. This study seeks to quantify the benefits generated through improved access to general practice. Literature is used to generate assumptions which are applied to ‘joined-up’ data sets to estimate the short, medium and long term impacts of general practice. In particular, the modelling considers the impact of general practice on three patient subgroups; these results are scaled up to estimate the aggregate impact at the UK level. Full details of the modelling approach employed in this study are presented in Appendix B. Figure 2 summarises the modelling approach.

• Stakeholder engagement. This study has also been supported by on-going engagement, both internally with key RCGP stakeholders and a number of external stakeholders. The project steering group has provided support to the project team. Additionally, members of Deloitte’s clinical panel have been engaged to provide support and validate key assumptions driving the modelling approach.

15 A ‘joined-up’ data set is a data set across settings of care which shows how resources are used by patients across the health care system.

16 The subgroups considered are Healthy Patients, Long Term Conditions and Frail Elderly/Dementia.
A limitation of this study is that it does not specify the level of investment required to generate a particular saving. However, it assumes that a material improvement in the level of access to general practice could generate significant benefits to patients and the NHS as a whole.

It is also noted that in reality, realising all of the benefits presented in this report will require an increase in the size of the GP workforce. This may be difficult to achieve in the short term, given the national challenges around the recruitment and retention of GPs. The RCGP has previously stated that there may be 10,000 too few GPs in the UK.

1.3 This report
This report presents the results of the study into the economic benefits of general practice in the UK. The remainder of this report is structured as follows:

- Section 2 presents the role of GPs and current challenges;
- Section 3 presents key findings from the study; and,
- Section 4 presents conclusions and recommendations.

Additional information is presented in supporting annexes.

---

**Figure 2: Overview of modelling approach**

<table>
<thead>
<tr>
<th>Patient types</th>
<th>Mapping &amp; pathway costing</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTCs &amp; Multimorbidity</td>
<td>Ambulance</td>
<td>Savings by patient type</td>
</tr>
<tr>
<td>Well</td>
<td>GP Appointment</td>
<td>Total Savings</td>
</tr>
<tr>
<td>Frail &amp; Elderly</td>
<td>Home</td>
<td>Future Total Savings</td>
</tr>
<tr>
<td></td>
<td>Home</td>
<td></td>
</tr>
<tr>
<td>Inpatient</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Scenarios
1. Short run → Shifts in setting of care
2. Medium run → Prevention and disease management
3. Long run → Change in prevalence through targeting disease drivers

---

**Legend**
- **LTCs & Multimorbidity**
- **Well**
- **Frail & Elderly**
- **GP Appointment**
- **Ambulance**
- **Home**
- **Pharmacy**
- **Inpatient**
- **Scenarios**
2 The role of general practice and current challenges

This section presents a brief background on the role of general practice within the wider health care system along with a summary of current challenges facing general practice.

2.1 Role of general practice

In many ways, general practice is the cornerstone of the health care system, acting as the main point of contact for the general public, with 90% of patient contacts with the NHS taking place in general practice. Examples of the role of general practice include diagnosis, management of pre-existing conditions, acting as a ‘navigator’ or ‘hub’ to secondary care, co-ordinating care, screening and health promotion.

General practice typically acts as the entry point to the health care system, making the most medical diagnoses in the NHS. This ‘navigator’ role for specialist care means that GPs have a unique ability to balance caution with the need to avoid unnecessary referrals. As a result they play a key role in managing the demand for secondary care, ensuring referrals are kept at an appropriate level. GPs are also responsible for various aspects of a patient’s overall care, managing their interaction with specialists and acting as patient advocates.

For those with chronic illnesses, general practice plays a key role in case management, offering continuity and co-ordination of care. Patients with long term conditions account for 55% of all GP appointments and as a group particularly value the continuity of care associated with general practice. Continuity of care is associated with lower risk of hospital admissions, satisfaction and adherence to medical regimes. The benefits of general practice are particularly relevant for those with more than one long term condition, with the average number of GP consultations for those with multi-morbidities at 9.35 per year compared to 3.75 for those without multi-morbidity. Patients with multi-morbidities have expressed their preference for support from one co-ordinator of care. Through their role as medical generalists, GPs are able to review a patient’s conditions alongside one another instead of requiring several disease specific consultations. This holistic approach minimises the risk of adverse events due to polypharmacy and duplication of care. Research has found that treatment of diseases in isolation is inefficient and may lead to potentially inappropriate treatment.

18 For example, see: Evans P. 2008. Diagnosing type 2 diabetes before patients complain of diabetic symptoms – clinical opportunistic screening in a single general practice.
23 RCGP. 2014, Care of people with mental health problems.
25 For example, see: ICGP. 2004. Submission to the National Obesity Task Force.
General practice is not only the main access point for physical problems, with almost one in four consultations for mental health problems. For many patients suffering from mental health conditions, such as depression and anxiety, general practice will be the only contact point they have with the health care system. Ninety per cent of patients with mental health problems are managed in primary care. In addition to a standalone condition, mental illnesses are one of the most common forms of co-morbidity, with strong evidence to show that those with long term conditions are two to three times as likely to experience a mental health problem as the general public.

In recent years, general practice has also assumed a role within health promotion, tackling lifestyle risk factors such as excessive alcohol consumption, lack of physical activity and smoking. General practice is well-placed to address these lifestyle factors given its high contact rate with the general public especially among smokers, excessive drinkers and patients with obesity.

The two short case studies presented in Figure 3 illustrate the potential role of general practice and how it can interact with other components of the health care system in innovative ways to generate benefits. These examples are by no means exhaustive; a larger list of case studies is presented in Appendix D.

**Figure 3: Two short case studies to illustrate the role of general practice**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GPs with ambulance service</strong></td>
<td>Following a winter pilot of GPs working 19 hour shifts over weekends in ambulances, South Worcestershire, Wyre Forest and Redditch and Bromsgrove CCGs are funding an extended pilot programme with GPs working alongside paramedics:</td>
</tr>
<tr>
<td>• GPs are called out to emergencies by the control room or by paramedics themselves when they feel that the patient would be better dealt with by a GP than taking them to A&amp;E.</td>
<td></td>
</tr>
<tr>
<td>• Paramedics and call handlers are given a list of medical conditions that may be suited to GP intervention.</td>
<td></td>
</tr>
<tr>
<td>• Since its launch in 2012, over 2,900 emergency calls have been dealt with by GPs, preventing over 2,300 A&amp;E attendances.</td>
<td></td>
</tr>
<tr>
<td>• It is estimated that so far the scheme has resulted in over £2.5 million in savings to the NHS</td>
<td></td>
</tr>
<tr>
<td><strong>Cardiology Discharge Project: Nottingham</strong></td>
<td>In 2012 concerns were expressed by Nottingham GPs and cardiology consultants that too many cardiology patients were being asked to attend hospital for unnecessary follow-up outpatient appointments. To investigate whether many of these patients could be more appropriately monitored by their GPs instead a pilot was launched:</td>
</tr>
<tr>
<td>• GPs and consultants shared patient information using a password controlled system in order to assess them, with results indicating that a large proportion could be safely discharged into general practice.</td>
<td></td>
</tr>
<tr>
<td>• By the beginning of April 2013, reviews had been carried out on 1,090 patients with 720 discharged from hospital outpatient systems. Recent hospital admissions data has shown a decrease in cardiology outpatient attendances.</td>
<td></td>
</tr>
</tbody>
</table>
2.2 Current challenges faced by GPs

Despite the expanding role of general practice in the past few years, the proportion of the NHS budget allocated to general practice has decreased, falling in real terms by approximately £9.1bn cumulatively from 2004/05 to 2011/12. At the same time, general practice has seen the number of consultations rise, with an estimated 40 million additional patient consultations occurring in 2013/14 compared to 2008/9 and an increasing number of practice list closure applications, reflecting the growing number of practices under considerable strain. Figure 4 provides excerpts from the RCGP’s annual membership survey, which highlights the challenges facing GPs.

Figure 4: Summary of RCGP Survey 2013

RCGP 2013 Survey:

- Over 80% say they have insufficient resources to provide high quality patient care
- 47% have cut back on the range of services provided for patients
- 39% have had to cut practice staff due to funding shortages
- Over 70% forecast longer waiting times within the next 2 years due to funding cuts
- 80% say continuity of care will be increasingly difficult to deliver for the vulnerable elderly

---


It is noted that over the past year, GP activity in Northern Ireland has increased by 7% according to the Health and Social Care Board. Between 2008/9 to 2013/14, the number of contacts increased from 10.2m to 12.4m. There are on average 6 consultations per patient/year NI, compared to 3.4 for England.

28 Pulse. 2014. ‘One in three GP requests to close practice lists blocked by NHS England’.
This pressure is set to increase further with an ageing population expected to significantly increase demand for general practice. The Office for National Statistics (ONS) predicts a 23% increase in the population aged 65 years or over by 2018, increasing from a population size of 10.8 to 12.7 million, and reaching 16.9 million by 2035.29 The prevalence of long term conditions increases with age and as such an ageing population will likely be associated with increased demand for general practice services. In addition, the number of people with multi-morbidities is due to rise.30

In addition to the ageing population, general practice also faces increasing strain due to the increase in lifestyle risk factors. Tobacco smoking was the leading risk factor in the UK in 2010 despite the fact that smoking rates have declined slowly in recent years, indicating that smoking still reflects significant health risk. High BMI, physical inactivity and alcohol use ranked third, fourth and fifth respectively.31

Despite growing demand in the foreseeable future, general practice has seen its funding fall in real terms by £450 million over the past 3 years, and if current trends continue, by 2017/18 it will fall to a record low of 7.29% of the NHS budget representing £1.59 billion less in real terms compared to 2012/13. This funding gap is already impacting the ability of general practice to deliver accessible care; for example, 26.5% of patients surveyed in Northern Ireland stating that they were dissatisfied with the access they had to their GP in 2014.32

![Figure 5: Projected age distribution of the UK population, 2012-2037](image)

---

30 For example, see: Department of Health. 2012. Long-term conditions compendium of information: 3rd edition.
3 Key findings

This section presents key findings of the study, along with a number of case studies which illustrate the wider benefits that general practice can deliver. The financial savings associated with improved access to general practice are estimated for three patient subgroups:

- **Healthy patients.** Patients in this category are classified as those with no long term conditions, occasional use of their GP and patients that do not fall into any other categories;

- **Long term conditions.** Patients with one or more long term conditions are mapped into the ‘long term condition’ group; and,

- **Frail Elderly/Dementia.** People over the age of 65 that have secondary care activity such as dementia, broken bones in the upper body and falls.

Undertaking this analysis at the patient subgroup level enables policy makers to consider the potential impact of their investment decisions and to prioritise spending within the constraint of an overall funding envelope. These three patient subgroups account for approximately 85% of the population; results are scaled up to estimate total savings at the aggregate, UK level.33

The rationale for the selection of these groups is presented in Appendix B.

### 3.1 Short term impacts

In the short term, improved access to general practice could support a shift in settings of care. A literature review was undertaken to identify the potential impact of improved access to general practice on the demand for secondary care services. This literature was used to generate assumptions which were used to model the financial impact of improved access to general practice in the short term. These estimates are generated at the patient subgroup level.

Three short term impacts are considered:

- An increase in access to general practice could lead to a reduction in the number of A&E attendances. Research has shown that a there is a significant level of demand in A&E departments for conditions that are not serious or life-threatening, with recent estimates placing the proportion of attendances that could have been dealt with in general practice between 15% - 26.5%.34 This represents a substantial cost to the NHS as the average cost of such an attendance ranges from £61 - £8235 compared to the average cost of a GP consultation of £45.36 Both access to and continuity of care in general practice have often been negatively associated with A&E attendances, highlighting the role of general practice in reducing costly A&E utilisation for low severity cases.

- An increase in access to general practice could lead to a reduction in social admissions. For the frail elderly, access to general practice can often mean the difference between managing a condition at home and a hospital admission. Social admissions, admissions based not on the severity of a patient’s condition but on their inability to cope if discharged, pose a significant issue in hospitals. Elderly patients are more likely to be admitted after attending A&E, with 8 - 40% of these shown to be inappropriate, and 30% of elderly people declining functionally upon admission to hospital. If frail elderly patients are unable to access their GP, often they are taken to A&E or an ambulance is called, increasing their risk of inappropriate hospital admissions and a decline in their health. In addition, great achievements could be made with improved primary and community nursing and urgent social care.

- An increase in access to general practice could lead to a reduction in ambulance call outs that are not clinically appropriate, generating further financial savings. Hospital Episode Statistics (HES) data indicates that in 2012/13, 24% of all A&E attendances were initiated through an ambulance callout. Data from clinical audits is used to estimate the total number of ambulance call outs that may be avoided in the short term.
Results
Using a ‘joined-up’ data set from a local health economy in the North of England, the potential impact on the three patient subgroups is estimated. Specifically, this data set allows an estimation of the average number of A&E attendances per patient, per year, by subgroup. This, in turn, enables an evaluation of the financial impact of improved access to general practice at the patient subgroup level.

However, it is noted that even if 15 - 26.5% of A&E attendances could clinically be handled in general practice, in reality not all these cases will be treated in general practice. Even if there is a significant improvement in access to general practice, there is always likely to be an element of risk aversion by patients and carers e.g. people going to A&E ‘just in case’ and to be ‘safe’ – this is particularly likely for certain patient groups. As such, a scaling factor is applied to results. This ensures that the results represent the savings that could reasonably be expected to accrue with an improved access to general practice.37

The charts below present the short term savings associated with improved access to general practice. Results are aggregated and therefore include savings from a reduction in A&E attendances, a reduction in social admissions and a reduction in ambulance call outs. Disaggregated results are presented in Appendix B.

Additional points to note:

• Three scenarios are considered, based on the literature reviewed: 15%, 20% and 26.5% of A&E attendances could be dealt with in general practice.

• Scaling factors of 15%, 35% and 50% are considered to reflect risk averse patient groups.38

Assuming 20% of A&E attendances could be dealt with in general practice and a scaling factor of 35%, the short term savings associated with improved access to general practice is around £261 million.

Figure 6: Short term savings assuming that 15% of A&E attendances could be dealt with in general practice (£m)

37 These percentages reflect the assumptions on the proportion of A&E visits that are inappropriate and are based on a literature review.

38 As noted above, a scaling factor is applied to account for that not all A&E attendances which are clinically inappropriate will be dealt with in general practice, even if there is a significant improvement in access to general practice. A scaling factor of 15% assumes that in reality, only 15% of the clinically inappropriate A&E attendances would shift to general practice.
However, assuming that 26.5% of A&E attendances could be dealt with in general practice and a scaling factor of 50%, the short term savings associated with improved access to general practice could be up to £447.3m. This annual saving can be broken down into three main categories of savings: £133.9 million through reducing A&E attendances by up to 1.7 million patients, reducing the cost of A&E visits from £1.6 billion to £1.4 billion; £143.3 million through reducing unnecessary ambulance call-outs by 544,815, reducing the cost of face-to-face ambulance call-outs from £1.7 billion to £1.5 billion; and, £170.1 million by reducing the length of stay for patients aged over 65, by providing greater primary care support at home.
The results above suggest significant potential short term savings may be associated with improved access to general practice in the UK. Whilst the long term condition and Frail Elderly/Dementia patient groups represent a relatively small share of the overall population, the savings associated with improved access to general practice are significant for these groups. This is because they are more intensive users of A&E services than the ‘Healthy Patients’. This has important implications for policy makers. This is particularly the case for the long term condition category, as aggregate short term savings are higher for this group than the Healthy Patients group. The most significant driver of these savings is the reduction in ‘social admissions’, which only apply to people aged over of 65 (many of whom fall within the long term condition group).

Figure 9 illustrates the transmission mechanism through which general practice can reduce the level of social admissions.

**Figure 9: Illustrative case study to illustrate how GPs can reduce social admissions**

**GP with ambulance service – An illustrative patient experience**

Doris is an elderly lady in her 80s who lives alone with diabetes and hypertension, but is generally fit and well. She develops a severe balance problem and vomiting, becoming increasingly unwell and was confined to her bed upstairs as she was too unsteady to use the stairs. As she had no family locally and her GP surgery was closed she called 999 for an ambulance.

Doris was first seen by a paramedic who traditionally would have taken her to A&E to be assessed, after which it was very likely she would have been admitted as she would not have been able to travel home and care for herself. However, due to the GPs with ambulance scheme, the paramedic was able to call in the local GP who gave her an injection to settle the dizziness and sickness, and tablets to take until her GP could visit the following day, who arranged for her daughter to stay with her for a few days and made a referral to the community physiotherapy to support her mobilisation.

Through the GPs with ambulance scheme, a hospital admission was avoided.

3.2 Medium term impacts

In the medium term, improved access to general practice could support patients to take a more pro-active approach to managing their conditions. In particular, increased contact with general practice may support better co-ordination of care and over time this could lead to improved disease management and fewer avoidable admissions. The literature was used to generate assumptions which were used to model the potential financial impact of improved access to general practice in the medium term.

There is a body of literature on the relationship between access to general practice and the level of avoidable admissions. King’s Fund reports that currently ambulatory care sensitive conditions (ACSCs) account for 1 in 6 emergency admissions and costs the NHS £1.42 billion annually. The paper estimates that emergency admissions could be reduced by 8 - 18% with effective case management at the general practice level for chronic and acute conditions. The Kings Fund (2010) states that early identification of patients with ACSCs is crucial in order to ensure successful management of the condition.

Factors that were frequently associated with the physicians rating as potentially avoidable were after hours’ absence of the treating physician and suboptimal monitoring; implying that improved access to general practice could have a significant impact on avoidable admissions.

A specific example of an ACSC is asthma, where the literature suggests that increased access to general practice leads to lower avoidable hospitalisations. It is noted that barriers to timely and effective use of health services can lead to increased costs and worse clinical outcomes. Adjusting for insurance status and other potential confounders, the study (in the US) found that reporting at least one access problem was significantly associated with making at least one asthma-related emergency department visit in the past year. Additionally, they inferred from their results that even for those with a regular source of primary care, real or perceived barriers to obtaining care may translate into increased use of the emergency department.

Results

The charts below present the medium term savings associated with improved access to general practice. Results are presented by subgroup. Further detail on the mapping of individual diseases to patient subgroups is presented in Appendix B. The assumptions underpinning these estimates are drawn from the literature. Three scenarios are considered, namely an 8%, 11% and 18% reduction in admissions for ACSCs driven by an improvement in access to general practice.

Figure 10 shows the potential reduction in the number of ACSC admissions, by patient subgroup.

---

39 Ambulatory care sensitive conditions (ACSCs) are conditions where effective community care and case management can help prevent the need for hospital admission. Even if the ACSC episode itself is managed well, an emergency admission for an ACSC is often a sign of the poor overall quality of primary and community care. Examples include congestive heart failure, diabetes, asthma, angina, epilepsy and hypertension.


41 For example, see: The King’s Fund. 2012. Data briefing: Emergency hospital admissions for ambulatory care-sensitive conditions.


43 Bair. 2001. Does “mainstreaming” guarantee access to care for Medicaid recipients with asthma?
These results suggest that improved access to general practice has the potential to generate significant savings in the medium term. As for the short term estimates, the highest savings relate to patients in the long term conditions group. This is expected given that the medium term impacts are largely associated with patients managing their long term conditions effectively over time, thus reducing the likelihood of unplanned, emergency hospitalisation. These results are based on the current demographic composition of the population and may underestimate the actual value of future savings as the Department of Health (DH) projects that the number of people with multiple long term conditions (for whom costs are highest) will increase from 1.9 million in 2008 to 2.9 million by 2018.  


Figure 10: Annual reduction in the number of admissions for ACSCs in the medium term

Figure 11: Annual financial savings from reduced expenditure on ACSCs in the medium term (£m)
Figure 12 presents an illustrative case study demonstrating how general practice can impact the management of diabetes.

**Figure 12: Case study to illustrate the impact of general practice on diabetes management**

**Tower Hamlets: Integrated Care Pilot 2008**

**Background:** There was a rapidly growing prevalence of Type 2 diabetes with 7.1% of the population with disease. In 2008, it was recognised that diabetes care in Tower Hamlets was suboptimal. There were high rates of hospital admissions for diabetes related complications, and little evidence of systematic diabetes care. They became a pilot site for integrated care and developed eight general practice networks each with funding of £200,000.

**Intervention:** All the general practices in this PCT were grouped into eight networks of four to five practices, each supported by a network manager. A multi-disciplinary team developed a care package for Type 2 diabetes management, with financial incentives based on network achievement of targets. Key measures for improvement:

- Number of diabetes care plans completed
- Proportion of patients attending for digital retinal screening
- Proportion of patients achieving a number of biomedical indices:
  - Cholesterol and blood pressure joint target: 50% of patients to have a cholesterol value of ≤4.0 mmol/l combined with a blood pressure of ≤140/80 mm Hg.
  - Average HbA1c value – HbA1c or glycated hemoglobin is a form of hemoglobin that is measured primarily to identify the average plasma glucose concentration over prolonged periods of time. It is often used as a measure of a diabetic patient’s ability to control their blood glucose levels.

**Components of the care package:**

- Active patient recall for an initial appointment to collect biomedical indices (BMI, blood pressure, renal function, HbA1c, retinal screening, smoking status, foot health check)
- Case planning review: a 30 - 40 minute meeting with a doctor or nurse trained in motivational interviewing, in which goals for the coming year are tailored to the patient’s needs
- Interim discussions through the year review elements of the care plan
In addition to these step changes in key measures, in 2012 Tower Hamlets ranked top among all PCTs in England for cholesterol and blood pressure control. This was despite being ranked as the third most socially deprived local authority in England.

**Conclusion:** The study found that significant clinical improvements in diabetes care can be made by a combination of financial and organisational investment in networks of general practices, using incentive payments alongside educational facilitation with specialist input.
3.3 Long term impacts

In recent years, general practice has also taken on a wider role of health promotion, proactively targeting lifestyle risk factors such as excessive alcohol consumption, lack of physical activity and smoking. General practice is often considered to be an ideal setting to address these lifestyle factors given its high contact rate with the general public (90% of patient contact with the NHS takes place in general practice\(^{45}\)). Additionally, smokers, excessive drinkers and patients with obesity may have more GP contacts than members of the healthy general public. This study considers the long term financial savings that could be generated through improved access to general practice. Specifically, it considers the potential for general practice to:

- Increase smoking cessation rates; and,
- Reduce alcohol consumption in patients that consume harmful or hazardous levels of alcohol.

Brief and intensive interventions held in general practice have been shown to increase cessation rates for smoking and excessive drinking. As with the short and medium term, the academic literature on these interventions is used to estimate the potential financial impact. However, given the limited data available, this analysis is undertaken at an aggregate level, rather than at a subgroup level.

Smoking cessation

A review of physician advice for smoking cessation found that out of 17 trials of brief advice, as part of a minimal intervention, all demonstrated a statistically significant increase in cessation rates. Brief advice is advice given in a single consultation with or without a leaflet, and at most one follow-up consultation. Using an unaided cessation rate of 4%\(^{46}\) as a baseline, the literature found that brief advice increased the cessation rate to around 6.64% and that intensive intervention increased it to 7.44%. Intensive intervention requires a greater time commitment at initial consultation, use of additional materials and more follow-up visits. These increased smoking cessation rates are applied to the total number of smokers who want to quit in the UK to calculate the additional number of cessations with GP-led interventions. Additionally, data on the cost per smoker to the NHS is used to estimate the potential savings generated through improved access to general practice in the long term.

Three different scenarios are considered for the cost per smoker to the NHS, a high, medium and low scenario.

---


\(^{46}\) Hughes, J. 2003. Motivating and helping smokers to stop smoking.
Figure 13 shows estimated annual saving from increased smoking cessation through both brief and intensive interventions in general practice.

Analysis suggests that improved access to general practice has the potential to lead to annual savings of between £29.5 million - £47.8 million through brief advice; and savings of £38.5 million - £62.2 million through intensive interventions. However, these are high level estimates as there are numerous factors which influence an individual’s decision to reduce smoking. Additionally, they do not take account of the impact of new developments such as e-cigarettes.47

**Alcohol consumption**

There is also literature which shows that general practice can help to reduce the number of people whose alcohol intake is above recommended levels. Brief, multi-contact interventions (up to 15 minutes long) along with follow-up contacts are found to be effective for those classified as ‘hazardous’ and ‘harmful’ drinkers but are not effective for those already alcohol dependent.48 One measure of the success of a health care intervention is the numbers needed to treat, i.e. the average number of patients who need to be treated to achieve one patient reaching safe drinking limits. A review of the literature shows that brief, multi-contact interventions have the best evidence of effectiveness, with numbers needed to treat ranging from to 10 to 6.7. This literature is used, along with the cost to the NHS per excessive drinker to estimate potential savings to the NHS from improved access to general practice.

Two different scenarios are developed for the numbers needed to treat; a low and a high scenario based on observed proportion of hazardous, harmful and dependent drinkers observed in the UK, and a scaling factor of 30% is applied to account for the fact that not all general practices will screen for excessive drinking.

---

47 An e-cigarette is a battery-powered vaporizer which simulates tobacco smoking by resembling the consistency, smell and taste of smoke.

48 Hazardous drinking: when a person drinks over the recommended weekly limit of alcohol but with no alcohol related health problems. Harmful drinking is defined as when a person drinks over the recommended weekly amount of alcohol and experiences health problems but are not dependent. Dependent drinking is where a person feels unable to function without alcohol. (NHS Inform).
Figure 14 presents the estimated potential annual savings from reduced alcohol consumption. Estimated savings are within the range £46.8 million - £69.9 million.

However, it is understood that in order for these interventions to be successful there would need to be funded and driven promotion of these services. Specifically, the self-identification of patients that they are ‘hazardous’ or ‘harmful’ drinkers requires a large cultural shift in the UK.\(^\text{49}\)

Reduced expenditure associated with smoking and alcohol related conditions are just two of the potential long term impacts that general practice can generate. These examples are illustrative, given the relative paucity of data and quantitative analysis on the potential long term impact of general practice. In reality, the impact of general practice on lifestyle factors is likely to be significantly larger.

\(^{49}\) For example, see: www. drinkaware.co.uk
4 Conclusions and recommendations

4.1 Summary of findings
Improving access to general practice in the UK is both urgent and essential, as demonstrated by a number of recent public calls across the country. In particular, there has been a focus on the potential for GPs in the UK to operate extended opening hours. This study has sought to quantify the potential savings that could be generated by improving access to general practice across the UK. The overarching finding from this study is that there are significant financial benefits that could be delivered in the short, medium and long term. Specifically:

- In the short term, improved access to general practice could lead to shifting settings of care; with significant volumes of activity moving from more costly acute settings to general practice. This shift has the potential to lead to financial savings and also reduce significant pressure on the acute sector. Estimated potential annual savings from shifting settings of care are in the range £315 - £417 million.

- In the medium term, general practice could have a material impact on the level of avoidable emergency admissions. In addition to this financial saving, patients are likely to take a greater role in managing their conditions, leading to benefits in terms of health outcomes and patient experience. Estimated potential annual savings from reducing avoidable admissions are in the range £148 - £333 million.

- In the long term, general practice could generate savings by targeting lifestyle factors that predispose individuals to diseases. Improving lifestyle factors could reduce the NHS expenditure on treating certain conditions. It is estimated that in the long term, improved access to general practice has the potential to deliver savings to the NHS of £68 - £110 million per year in relation to smoking cessation and £47 - 70 million per year in relation to reduced alcohol consumption.

4.2 Delivering change
The savings estimated in this report are significant, particularly in relation to the current share of NHS funding that is allocated to general practice. However, whilst there are significant financial benefits associated with improved access to general practice, real funding for general practice has declined since 2004/5 in the UK. As such, a general practice funding gap has developed in the UK.

In order to improve access to general practice and deliver the benefits outlined above, funding is required both to close the existing funding gap, but also to develop the infrastructure and capacity to introduce new service delivery levels. Policy makers should consider the costs associated with improving access, for example operating extended hours services. This should be considered at the local health economy level, taking account of both demand and supply side factors.

It is also noted that increased funding to general practice is an alternative to A&E in clinical terms, however, a cultural change in patient understanding is required to ensure people appropriately use additional access to services. Whilst investment is required to ensure that there is sufficient infrastructure to provide improved access to general practice, the role of patient education should not be underestimated. As such, policy makers should consider investing to ensure that patients have sufficient information to understand different settings of care and make appropriate decisions. This cultural shift is necessary in order to ensure that patients make use of improved access to general practice. Additionally, it is noted that an increase in general practice funding may require a re-allocation of funds from secondary care to general practice.
4.3 Demographics
Another key finding emerging from this study is that improving access to general practice could have a significant impact on patients with long term conditions (particularly in relation to the absolute number of patients with long term conditions). Results presented in this report are based on the current demographic structure of the population. However, this is likely to change with an ageing population implying an increase in the prevalence of long term conditions. As such, the results presented in this report are likely to be conservative and future savings will likely be significantly higher.

Patients with long term conditions and multi-morbidities have been at the forefront of policy makers’ agendas in recent times. This study shows that this group could benefit significantly from increased investment in general practice.

4.4 Next steps
This study shows that there are significant benefits associated with improved access to general practice. In order to implement change and realise these benefits, policy makers must consider this study in the context of wider developments in the health and social care system. This will ensure that maximum value is delivered to patients. This includes taking account of the appropriate mechanism for improving access to general practice, including consideration of:

- **Learnings from existing pilots.** Examples include integrated care pioneer sites or Better Care Fund projects developing new ways of improved access to general practice. This can provide valuable insight on ‘what works well’ in practice.

- **Incentives created by the payment system.** It is important that policy makers are aware of the probable future configuration of the payment system, for example, capitation based payment and a move towards gain/loss sharing agreements at the local health economy level. Service development should be linked to the payment system to ensure that incentives between commissioners and providers are aligned and maximum clinical and financial benefit is delivered within the system.

- **Overcoming key challenges.** Policy makers should consider the likely timescales required for delivering improved access to general practice. One of the key challenges around this is the national difficulty in recruiting and retaining GPs. This challenge must be overcome to deliver the scale of the benefits mentioned above.

It is recommended that policy makers from different agencies within the health care system work closely together to understand each of these issues in further detail. This will likely entail a joint work programme to determine the most appropriate mechanism for delivering improved access to general practice.


Appendix B
Modelling approach

B.1 Selection of subgroups
This section presents the rationale behind the selection of subgroups for this study. For each of the subgroups below a definition is presented, along with the pros and cons associated with it.

Table 1: Selection of subgroups

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Definition</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Patients - Children</td>
<td>Age 0-18</td>
<td>HES data contains information on demographic profiling which enables children to be identified as a separate subgroup.</td>
<td>Different pattern of resource usage (A&amp;E prevalence)</td>
</tr>
<tr>
<td></td>
<td>Included in no other group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>Age: 65 years+ Secondary care activity including: dementia, broken bones in the upper body, falls</td>
<td>Relevant for the study: NHS states that &quot;if frail older people are properly supported, &quot;they are less likely to reach crisis, require urgent care support and experience harm&quot;. One of the groups used in Any town modelling and therefore considered to be a priority from NHS England.</td>
<td></td>
</tr>
<tr>
<td>Dementia</td>
<td>Individuals suffering from dementia</td>
<td>Clinical priority of RCGP for 2012-2015</td>
<td>A specific pathway rather than patient group</td>
</tr>
<tr>
<td>Complex needs adults</td>
<td>Alcohol abuse Drug abuse Homelessness</td>
<td>Only limited data available (data on alcohol abuse from HES, no data on drug abuse)</td>
<td>Narrow sample and cannot be identified from HES data and also existing joined-up data sets we have developed through previous engagements.</td>
</tr>
<tr>
<td>Maternity</td>
<td>Women who have given birth Women who have received antenatal care</td>
<td>Data availability – easy to identify from HES. One of the Protected characteristic as specified in the Equality Act of 2010 and therefore a relevant area of consideration.</td>
<td>Small subgroup: approximately 700,000 births annually²¹. Less relevant to the project objectives (hospital stay related to maternity health tends to be unavoidable, potentially limiting role of primary care in reducing costs to secondary care for this group of patients)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Definition</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Patients adults</td>
<td>Age 19-64</td>
<td>Broad sample</td>
<td>Whilst this group represents majority of the population, it is unlikely to capture the majority of secondary care attendances.</td>
</tr>
<tr>
<td></td>
<td>No long term condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occasional use of GP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy Patients elderly</td>
<td>Age 65+</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No long term conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-morbidities</td>
<td>Three or more long term conditions (long term conditions)</td>
<td>Aging population increases the prevalence of multi-morbidities. The number of people with three or more long-term conditions is predicted to rise from 1.9 million in 2008 to 2.9 million in 2018&lt;sup&gt;52&lt;/sup&gt;</td>
<td>Data availability, i.e. segmenting the population in a way that enables an identification of 3 or more long term conditions. This was not feasible given the timeframes and as such we used patients with one or more long term condition as a subgroup. Narrow subgroup (2.9 million)</td>
</tr>
<tr>
<td>Long term conditions</td>
<td>Age: 0 years +</td>
<td>Priority in the ‘Putting Patient First’ NHS England business plan for 2013/14 - 2015/16</td>
<td>Given the timescale associated with the project, there is no simple user-friendly method of data filtering which would provide a breakdown between long term conditions, i.e. asthma/diabetes etc. As such, we considered patients with more than one long term condition.</td>
</tr>
<tr>
<td></td>
<td>One or more long term condition</td>
<td>Relevant to demonstrate medium term impacts</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>People with long term conditions account for: -50% of all GP appointment -70% of all inpatient bed days&lt;sup&gt;53&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Palliative care</td>
<td></td>
<td>Topical – End of life care has been a clinical priority of the RCGP since 2008.</td>
<td>Small group. Less relevant given the project focus – although GPs may play a critical role for these patients, and there is also a high level of involvement of hospitals, hospices and palliative care nurses.</td>
</tr>
</tbody>
</table>


As illustrated in the table above, there are multiple patient groups that could be considered for modelling purposes. However, the chosen groups must be those which have clear and generally accepted definitions. In addition, there must also be data available, either through HES or through existing ‘joined-up’ data sets that have been developed and used through previous engagements. Furthermore, these data sets must be sufficiently representative of the population as a whole. Broad patient groups are selected, with the aim of aggregating these groups to a national level. Using narrow, overlapping patient groups (for example, maternity) would not enable this aggregation to be undertaken.

Given the above objectives, the following patient groups are selected for inclusion within the modelling approach:

- Frail Elderly/Dementia;
- Healthy Patients children/ Healthy Patients adults/ Healthy Patients elderly (we propose to combine these groups into a ‘Healthy Patients’ subgroup); and,
- Patients with one or more long term conditions.

### B.2 Short term impacts

This section will present the modelling approach that was used to estimate short term impacts of general practice. This will include:

- Flow diagrams to illustrate the overall approach;
- Details of the data sources and inputs used; and,
- Detailed results (including ranges and scenario analysis undertaken).

**A&E visits for multi-morbid patients**

The available data for the average number of A&E visits for those with long term conditions does not differentiate between those with one long term condition and those with more than one, therefore a multi-morbidity multiplier was used to calculate the average number of A&E attendances for each of the two patient groups. \(^{54}\)

The number of people with multi-morbidities in England in 2014 is calculated by trending the number of people with multi-morbidities in 2008 and the estimated number with multi-morbidities in 2018. This is then divided by the number of people with long term conditions in England to get the proportion of those with long term conditions who are multi-morbid in England, and assumed to apply to the whole of the UK. Multiplying by the UK population gives the number of people in the UK with one long term condition, and the number with multi-morbidities.

**In-hours Effect**

This section outlines the methodology used to estimate the impact of increasing the number of general practice consultations in-hours. For each patient category, the impact was estimated by considering the effect of reducing the number of inappropriate A&E attendances in-hours.

**Assumptions underpinning the analysis**

- It is assumed that the average number of A&E visits per patient per year for each patient category in a dataset from an urban local health economy is representative of the UK population. \(^{55}\)
- The distribution of patients across categories in the urban health economy dataset is representative of the UK population
- The aggregate decrease in A&E visits is spread equally across all three patient groups
- The overall proportion of A&E attendances in-hours is assumed to apply to all three patient groups

\(^{54}\) Due to lack of reliable data, the value of the morbidity multiplier is based on expert opinions and discussions with Deloitte’s clinicians.

\(^{55}\) It is noted that this is a particular challenge for Northern Ireland, given the more rural nature of its geography and demography.
Scenarios for the proportion of inappropriate A&E attendances

A scenario based analysis based on studies was used for the reduction in inappropriate A&E attendances:

- 15%
- 20%
- 26.5%

The lower and upper bounds of the scenario analysis were taken from literature, and 20% used as the base case.

**Table 2: Inputs**

<table>
<thead>
<tr>
<th>Input</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of patients in each group</td>
<td>These proportions are obtained from our existing dataset and applied to the UK population as whole</td>
</tr>
<tr>
<td>Number of A&amp;E visits per patient per year</td>
<td>Urban local health economy dataset</td>
</tr>
<tr>
<td>Average A&amp;E cost per attendance with no admission, no significant treatment and no investigation for Type 1 and Type 2 A&amp;E departments</td>
<td>NHS reference costs 2012/13</td>
</tr>
<tr>
<td>Proportion of A&amp;E visits that are self-referred</td>
<td>Hospital Episode Statistics (HES) data</td>
</tr>
</tbody>
</table>
*Lower bound:* 15% College of Emergency Medicine 2014
*Base Case:* 20% Midpoint                                              |
| In-hours: OOHs A&E attendances                                        | Health and Social Care Information Centre (HSCIC)                                        |
| Scaling Factor                                                         | Scaling factors of 15%, 35% and 50% are used in the model.                                |

**Detailed methodology**

This methodology was applied to each patient group:

1. Estimate the average number of in-hours self-referred A&E visits/patient/year by multiplying the average number of A&E visits/patient/yr by the proportion of which are self-referred and the proportion of attendances in-hours.

2. Calculate the reduced number of in-hours visits/patient/year by multiplying the number of self-referred visits/patient/year by the reduction in inappropriate attendances and the scaling factor.

---

It is noted that this is a particular challenge for Northern Ireland, given the more rural nature of its geography and demography.
To calculate the weighted average of an A&E attendance with no admission, no investigation and no significant treatment:

3. Subtract the reduced number of A&E visits/patient/yr from the old number to get the reduction in in-hours visits, and multiply by the average cost of an A&E attendance with no admission, no investigation and no significant treatment to calculate savings/patient/year.

\[
\text{Savings / patient / year} = \text{Number of A&E visits/yr} \times (1 - \text{Reduction in self-referred visits}) \times \text{Average cost of an A&E attendance}
\]

4. Multiply savings/patient/year by the number of patients in that category in the UK to calculate the total savings in the UK per year.

\[
\text{Total in hours savings / year} = \text{Savings / patient / year} \times \text{Number of Healthy Patients in the UK}
\]
Scaling up
As the patient categories cover only 84% of the population, the additional patients are mapped into one of each of the three patient categories.

Table 3: Mapping of patient groups

<table>
<thead>
<tr>
<th>In-hours Effect</th>
<th>Patient Category</th>
<th>Mapping</th>
<th>UK Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>End of life</td>
<td>Frail Elderly/Dementia</td>
<td>164,702</td>
</tr>
<tr>
<td></td>
<td>Complex Needs Adults</td>
<td>Multiple long term conditions</td>
<td>3,015,173</td>
</tr>
<tr>
<td></td>
<td>Early Years</td>
<td>Healthy Patients</td>
<td>4,805,915</td>
</tr>
<tr>
<td></td>
<td>Maternity</td>
<td>Healthy Patients</td>
<td>2,431,743</td>
</tr>
</tbody>
</table>

Results
Table 4: Scenario 1 – 15% of A&E attendances could be dealt with by general practice (£m)

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>Annual savings (£m)</td>
<td>1.9</td>
<td>4.3</td>
</tr>
<tr>
<td>1 long term condition</td>
<td></td>
<td>1.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td></td>
<td>9.7</td>
<td>22.6</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td></td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td></td>
<td>13.3</td>
<td>31.0</td>
</tr>
</tbody>
</table>
Table 5: Scenario 2 – 20% of A&E attendances could be dealt with by general practice (£m)

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>Annual savings (£m)</td>
<td>2.5</td>
<td>5.8</td>
</tr>
<tr>
<td>1 long term condition</td>
<td></td>
<td>1.9</td>
<td>4.4</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td></td>
<td></td>
<td>59.1</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td></td>
<td>12.9</td>
<td>30.1</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td></td>
<td>0.5</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td><strong>17.7</strong></td>
<td><strong>41.4</strong></td>
</tr>
</tbody>
</table>

Table 6: Scenario 3 – 26.5% of A&E attendances could be dealt with by general practice (£m)

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>Annual savings (£m)</td>
<td>3.3</td>
<td>7.7</td>
</tr>
<tr>
<td>1 long term condition</td>
<td></td>
<td>2.5</td>
<td>5.8</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td></td>
<td></td>
<td>57.0</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td></td>
<td>17.1</td>
<td>39.9</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td></td>
<td>0.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td><strong>23.5</strong></td>
<td><strong>54.8</strong></td>
</tr>
</tbody>
</table>
Out of Hours Effect
The same approach is used to estimate out of hours effects.

Results
Table 7: Scenario 1 – 15% of A&E attendances could be dealt with by general practice (£m)

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>Annual savings (£m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 long term condition</td>
<td>1.3</td>
<td>3.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td>1.0</td>
<td>2.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>6.9</td>
<td>16.0</td>
<td>22.9</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>0.3</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>Total</td>
<td><strong>9.4</strong></td>
<td><strong>22.0</strong></td>
<td><strong>31.5</strong></td>
</tr>
</tbody>
</table>

Table 8: Scenario 2 – 20% of A&E attendances could be dealt with by general practice (£m)

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>Annual savings (£m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 long term condition</td>
<td>1.8</td>
<td>4.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td>1.3</td>
<td>3.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>9.2</td>
<td>21.4</td>
<td>30.5</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>0.3</td>
<td>0.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td><strong>12.6</strong></td>
<td><strong>29.4</strong></td>
<td><strong>41.9</strong></td>
</tr>
</tbody>
</table>

Table 9: Scenario 3 – 26.5% of A&E attendances could be dealt with by general practice (£m)

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>Annual savings (£m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 long term condition</td>
<td>2.3</td>
<td>5.4</td>
<td>7.8</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td>1.8</td>
<td>4.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>12.1</td>
<td>28.3</td>
<td>40.4</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>0.4</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td><strong>16.7</strong></td>
<td><strong>38.9</strong></td>
<td><strong>55.6</strong></td>
</tr>
</tbody>
</table>
Reduced Ambulance Call Outs
This section outlines the methodology used to estimate the potential savings resulting from a reduction in the number of unnecessary ambulance call outs if there were increased access to general practice.

Assumptions underpinning the analysis
The proportion of avoidable ambulance call outs where primary care was best placed to prevent these call outs in the Oxfordshire Audit is representative of the UK as a whole.

Table 10: Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ambulance call outs per year</td>
<td>HES data 2012/13</td>
</tr>
<tr>
<td>Proportion of call outs that are unnecessary</td>
<td>Oxfordshire: Emergency department attendance, Audit of patients brought in by ambulance</td>
</tr>
<tr>
<td>Distribution across groups</td>
<td>Based on the distribution of calls by age (<a href="http://www.hscic.gov.uk/article/3884/Clarification-AE-arrivals-by-ambulance">http://www.hscic.gov.uk/article/3884/Clarification-AE-arrivals-by-ambulance</a>), the proportion of unnecessary call outs by patients groups was estimated.</td>
</tr>
<tr>
<td>Average paramedic costs</td>
<td>Unit costs of Health and Social care 2012</td>
</tr>
<tr>
<td>Scaling Factor</td>
<td>Scaling factors of 15%, 35% and 50% are used in the model.</td>
</tr>
</tbody>
</table>

Detailed methodology
This methodology is used for each patient category:

1. Map the ambulance call outs by age to ambulance call outs by category
2. Calculate the number of ambulance call outs attributed to the patient category by multiplying the total number of ambulance call outs by the proportion of call outs attributed to that patient category.
3. Multiply the number of call outs by the proportion that are unnecessary and the scaling factor, and subtract this from the original number of call outs to calculate the decrease.
4. Multiply the decrease in call outs for the patient category by the average cost per ambulance call out to calculate the total potential savings in that subgroup.
Figure 16: Reduction in inappropriate ambulance call outs methodology

<table>
<thead>
<tr>
<th>Example: Healthy Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ambulance call outs by Healthy Patients</td>
</tr>
<tr>
<td>= Total ambulance call outs x proportion of call outs by patient group B</td>
</tr>
<tr>
<td>Total decrease in call outs</td>
</tr>
<tr>
<td>= Number of call outs by Healthy Patients x proportion of call outs that are unnecessary x scaling factor</td>
</tr>
<tr>
<td>Total savings</td>
</tr>
<tr>
<td>= Total decrease in ambulance call outs x average cost of an ambulance call out</td>
</tr>
</tbody>
</table>

Scaling up
As the patient categories cover only 84% of the population, the additional patients are mapped into one of each of the three patient categories.

Table 11: Inputs

<table>
<thead>
<tr>
<th>In-hours Effect</th>
<th>Mapping</th>
<th>UK Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End of life</td>
<td>Frail Elderly/Dementia</td>
<td>164,702</td>
</tr>
<tr>
<td>Complex Needs Adults</td>
<td>Multiple long term conditions</td>
<td>3,015,173</td>
</tr>
<tr>
<td>Early Years</td>
<td>Healthy Patients</td>
<td>4,805,915</td>
</tr>
<tr>
<td>Maternity</td>
<td>Healthy Patients</td>
<td>2,431,743</td>
</tr>
</tbody>
</table>

As early years and maternity are mapped to the Healthy Patients subgroup, they are not included in the analysis for social admissions.

Results (£m)
Table 12: Potential financial impact of reduced ambulance call outs

<table>
<thead>
<tr>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>15.1</td>
<td>35.3</td>
<td>50.4</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>7.3</td>
<td>17.1</td>
<td>24.5</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>20.5</td>
<td>47.9</td>
<td>68.4</td>
</tr>
<tr>
<td>Total</td>
<td>43.0</td>
<td>100.0</td>
<td>143.3</td>
</tr>
</tbody>
</table>
Reduced Social Admissions
This section outlines the potential savings associated with reduced social admissions as a result of increased access to general practice for Frail Elderly/Dementia patients and those with long term conditions aged 65 and over. Social admissions are defined in the model as inappropriate A&E attendances that are admitted for those aged 65 and over.

Assumptions underpinning the analysis
• The proportion of those aged 60 and over with multiple long term conditions is used as a proxy for the proportion of those aged 65 and over with multiple long term conditions.

• The average length of a non-elective hospital admission is assumed to apply to those who are social admissions.

• The average length of stay for a non-elective hospital admission is used for both Frail Elderly/Dementia patients and patients with long term conditions aged 65 and over.

• The average A&E conversion rate is assumed to apply to social admissions

Scenarios for inappropriate attendances
A scenario based analysis based on studies was used for the reduction in inappropriate A&E attendances:

• 15%

• 20%

• 26.5%

The lower and upper bounds of the scenario analysis were taken from literature, and 20% used as the base case.

Table 13: Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of patients in each group</td>
<td>These proportions are obtained from our existing dataset and applied to the UK population as whole</td>
</tr>
<tr>
<td>Number of A&amp;E visits per patient per year</td>
<td>Urban local health economy dataset</td>
</tr>
</tbody>
</table>
<pre><code>                             | Lower bound: 15% College of Emergency Medicine 2014                   |
</code></pre>
<p>|                                                                    | Base Case: 20% Midpoint                                                |
| Proportion of A&amp;E visits that are self-referred                     | HES data                                                              |
| A&amp;E Conversion rate                                                 | NAO: Emergency Admissions to hospital: managing the demand            |
| Average length of stay of a non-elective admission                  | NAO: Emergency Admissions to hospital: managing the demand            |
| Proportion of 65+ with a long term condition                        | General lifestyle survey 2011                                          |
| Cost of a bed per day                                               | NHS reference costs 2012/13                                            |
| Scaling Factor                                                      | Scaling factors of 15%, 35% and 50% are used in the model              |
| UK population aged 65+                                              | ONS mid 2013 statistic                                                 |
| Proportion of 65-74 with a long term condition, and proportion of those aged 75+ with a long term condition | General lifestyle survey 2011                                          |</p>
Detailed methodology

As social admissions are predominately a problem with the elderly who are unable to cope with illnesses at home, only the Frail Elderly/Dementia patient category and the patients in the long term conditions category aged 65 and over are considered. In order to do this, the proportion of the long term conditions patient subgroup aged 65 and over had to be calculated.

1. Calculate the proportion of those aged 65+ with at least one long term condition by calculating the weighted average of the proportion of the 65+ population with a long term condition.

2. Multiply the proportion of the 65+ population with a long term condition by the total 65+ population to calculate the total number of people aged 65 or over with a long term condition.

3. Divide this by the number of people in the UK with a long term condition to get the proportion of those with long term conditions aged 65 or over.

To calculate the potential savings:

1. Multiply the number of A&E attendances per person per year by the proportion of which are self-referred and the proportion that are inappropriate to calculate the number of inappropriate self-referred A&E attendance per patient per year.

2. Multiply the number of self-referred A&E attendances per patient per year by the A&E conversion rate and the scaling factor to calculate the number of avoidable social admissions.

3. To calculate the savings per patient per year, multiply these avoidable social admissions by the average length of stay a non-elective stay and the cost of a bed day.

4. To aggregate these savings to the UK level:
   • For those in the Frail Elderly/Dementia subgroup, multiply the savings per patient per year by the total UK population of Frail Elderly/Dementia patients.

Figure 17: Illustrative example of methodology to determine savings
• To calculate the savings for those in the long term condition subgroup that are aged 65 or over, multiply the savings per patient per year for those in the long term condition subgroup by the total number of people with a long term condition in the UK and the proportion of these patients that are aged 65+.

Results

Table 14: Scenario 1 – 15% of A&E attendances could be dealt with by general practice

<table>
<thead>
<tr>
<th>Social Admissions Savings</th>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>15%</td>
<td>35%</td>
<td>50%</td>
</tr>
<tr>
<td>Long Term Conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 long term condition</td>
<td>Annual savings (£m)</td>
<td>12.3</td>
<td>28.8</td>
<td>41.1</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td></td>
<td>13.4</td>
<td>31.3</td>
<td>44.8</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td></td>
<td>3.1</td>
<td>7.3</td>
<td>10.4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td><strong>28.9</strong></td>
<td><strong>67.4</strong></td>
<td><strong>96.3</strong></td>
</tr>
</tbody>
</table>
Table 15: Scenario 2 – 20% of A&E attendances could be dealt with by general practice

<table>
<thead>
<tr>
<th>Social Admissions Savings</th>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long Term Conditions</strong></td>
<td>Annual savings (£m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 long term condition</td>
<td></td>
<td>16.5</td>
<td>38.4</td>
<td>54.8</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td></td>
<td>17.9</td>
<td>41.8</td>
<td>59.7</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td></td>
<td>4.2</td>
<td>9.7</td>
<td>13.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>38.5</strong></td>
<td><strong>89.9</strong></td>
<td><strong>128.0</strong></td>
</tr>
</tbody>
</table>

Table 16: Scenario 3 – 26.5% of A&E attendances could be dealt with by general practice

<table>
<thead>
<tr>
<th>Social Admissions Savings</th>
<th>Scaling factor</th>
<th>15%</th>
<th>35%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long Term Conditions</strong></td>
<td>Annual savings (£m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 long term condition</td>
<td></td>
<td>21.8</td>
<td>50.9</td>
<td>72.7</td>
</tr>
<tr>
<td>Multiple long term condition</td>
<td></td>
<td>23.7</td>
<td>55.3</td>
<td>79.1</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td></td>
<td>5.5</td>
<td>12.9</td>
<td>18.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>51.0</strong></td>
<td><strong>119.0</strong></td>
<td><strong>170.0</strong></td>
</tr>
</tbody>
</table>
### Aggregate In-hours and OOH Effect

| Table 17: Short term savings assuming that 15% of A&E attendances could be dealt with in general practice |
|---|---|---|---|
| **Aggregate savings, (Annual, £m)** | **Scaling factor** | 15% | 35% | 50% |
| **Long Term Conditions** | 46.5 | 108.4 | 154.9 |
| **Healthy Patients** | 23.9 | 55.7 | 79.6 |
| **Frail Elderly/Dementia** | 24.3 | 56.6 | 80.9 |
| **Total** | 95.0 | 221.0 | 315.0 |

| Table 18: Short term savings assuming that 20% of A&E attendances could be dealt with in general practice |
|---|---|---|---|
| **Aggregate savings, (Annual, £m)** | **Scaling factor** | 15% | 35% | 50% |
| **Long Term Conditions** | 56.9 | 132.8 | 189.7 |
| **Healthy Patients** | 29.4 | 68.6 | 98.0 |
| **Frail Elderly/Dementia** | 25.5 | 59.5 | 85.0 |
| **Total** | 112.0 | 261.0 | 373.0 |

| Table 19: Short term savings assuming that 26.5% of A&E attendances could be dealt with in general practice |
|---|---|---|---|
| **Aggregate savings, (Annual, £m)** | **Scaling factor** | 15% | 35% | 50% |
| **Long Term Conditions** | 70.5 | 164.5 | 235.0 |
| **Healthy Patients** | 36.6 | 85.3 | 121.9 |
| **Frail Elderly/Dementia** | 27.1 | 63.3 | 90.4 |
| **Total** | 134.2 | 313.1 | 447.3 |
Savings have been allocated based on registered patients in 2013.

<table>
<thead>
<tr>
<th>Aggregate savings, (Annual, £m)</th>
<th>Total UK</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Northern Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>46.5</td>
<td>39.1</td>
<td>3.9</td>
<td>2.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>23.9</td>
<td>20.1</td>
<td>2.0</td>
<td>1.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>24.3</td>
<td>20.4</td>
<td>2.0</td>
<td>1.2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Table 21: Short term savings assuming that 20% of A&E attendances could be dealt with in general practice (15% scaling factor) – National split

<table>
<thead>
<tr>
<th>Aggregate savings, (Annual, £m)</th>
<th>Total UK</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Northern Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>56.9</td>
<td>47.8</td>
<td>4.7</td>
<td>2.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>29.4</td>
<td>24.7</td>
<td>2.4</td>
<td>1.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>25.5</td>
<td>21.4</td>
<td>2.1</td>
<td>1.2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Table 22: Short term savings assuming that 26.5% of A&E attendances could be dealt with in general practice (15% scaling factor) – National split

<table>
<thead>
<tr>
<th>Aggregate savings, (Annual, £m)</th>
<th>Total UK</th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Northern Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>70.5</td>
<td>59.3</td>
<td>5.9</td>
<td>3.3</td>
<td>2.0</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>36.6</td>
<td>30.8</td>
<td>3.0</td>
<td>1.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>27.1</td>
<td>22.8</td>
<td>2.2</td>
<td>1.3</td>
<td>0.8</td>
</tr>
</tbody>
</table>

© Savings have been allocated based on registered patients in 2013.
B.3 Medium term impacts

This section will present the modelling approached used to estimate the medium term impact of increased case management in general practice on ambulatory case sensitive conditions.

Assumptions underpinning the analysis

- It is assumed that the distribution of patients across categories in an existing urban local health economy dataset is representative of the UK population.
- The % reduction in ACSC admissions is apportioned equally across all three subgroups.
- For disease such as cellulitis that affect all three patient categories where is insufficient epidemiological data to allow an allocation of admissions for that disease across the patient categories, admissions are apportioned based on the patient group share of the population.
- The average cost of an ACSC admission in England is assumed to apply to the rest of the UK.
- Using Cromer et al 2013, the ‘not at clinical risk’ group was used as a proxy for Healthy Patients.

Scenarios for the reduction in ACSC admissions

A scenario based analysis is used to cover a range of potential reductions in ACSC admissions following increased case management in general practice. Seven local authorities were divided into quintiles by the rate of ACSC emergency admissions, and the potential reduction in ACSC admissions based on the standardised rate in these quintiles:

- 8%  
  This is the potential decrease in ACSC admissions if each of the higher four quintiles reach the same level as the quintile below.

- 11%  
  This is the potential decrease in ACSC admissions if local authorities with rates that are significantly higher than average achieve the average rate of those with significantly lower ACSC emergency admission rates than average.

- 18%  
  This is the potential decrease in ACSC admissions if all local authorities had the same ACSC emergency admissions rate those in the lowest quintile.

Table 23: Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of all emergency admissions, and cost of emergency admissions attributed to ACSCs</td>
<td>Tian et al 2012</td>
</tr>
<tr>
<td>Proportion of the population each patient category accounts for</td>
<td>Urban local health economy dataset</td>
</tr>
<tr>
<td>Individual diseases as a proportion of ACSC admissions and cost</td>
<td>Tian et al 2012</td>
</tr>
<tr>
<td>Potential decreases in ACSCs as a result of increased investment in general practice</td>
<td>Tian et al 2012</td>
</tr>
<tr>
<td>Total emergency admissions in the UK</td>
<td>England: NHS England Sitreps 2013/14</td>
</tr>
<tr>
<td></td>
<td>Scotland: IDS Scotland 2012/13</td>
</tr>
<tr>
<td></td>
<td>Wales: Annual Pemergency department W tables 2012/13</td>
</tr>
<tr>
<td></td>
<td>N. Ireland: Hospital Statistics 2013/14</td>
</tr>
<tr>
<td>Total Cost of emergency admissions</td>
<td>NAO: Managing the demand, 2012/13</td>
</tr>
<tr>
<td>Number of influenza attributable hospital admissions for those at clinical risk and not at clinical risk by age.</td>
<td>Cromer et al 2013</td>
</tr>
<tr>
<td>Proportion of population over 65</td>
<td>ONS 2012 based population projections</td>
</tr>
<tr>
<td>UK Population</td>
<td>ONS Mid 2013 population estimate</td>
</tr>
</tbody>
</table>
Detailed methodology
The following methodology was used to calculate the potential decrease in ACSC emergency admissions:

1. Apportion the total number of ACSC emergency admissions in the UK by individual condition by multiplying the proportion of all ACSC admissions attributed to a condition by the total number of emergency admissions.

2. For each condition, apportion the admissions between patient subgroups, and sum across all conditions to obtain the total number of ACSC admissions for each patient group per year.

3. Apply the potential reduction in ACSC emergency admissions to calculate the potential reductions in emergency admissions for each patient subgroup.

Figure 18: Decrease in the ACSC Admissions Methodology

The following methodology was used to calculate the potential decrease in the cost of ACSC emergency admissions:

1. Calculate the total cost of ACSC admissions in England by multiplying the total cost of emergency admissions in 2012/13 by the proportion attributed to ACSCs. Then divide this by the total number of ACSC admissions in England to obtain the average cost of an ACSC admission in England.

2. Multiply the total number of ACSC admissions in the UK by the average cost of an ACSC admission in England to obtain the estimated total cost of ACSC emergency admissions a year in the UK.

3. Calculate the total cost of emergency admissions for each individual condition by multiplying the total cost by the proportion of this cost attributed to the individual condition.

4. Apportion the cost for each individual condition between patient subgroups using the mapping and sum over all conditions to get the total cost of ACSC admissions attributed to each patient subgroup.

5. Apply the potential reductions in admissions to the cost for ACSC admissions for each patient subgroup to obtain the potential savings.
Figure 19: ACSC savings methodology

ACSC Cost Savings

Cost of ACSC admissions by individual disease

= Total number of ACSC admissions x Proportion of cost of each individual disease

Map ACSC emergency admission costs across patient subgroups

Cost of ACSC admissions by patient category

= Sum of the ACSC costs for each individual disease attributed to each patient group

Potential Decrease in ACSC admissions: High: 18%     Medium: 11%     Low: 8%

Reduced number of ACSC costs by patient category

= Total number of ACSC costs in a group x (1 - Potential decrease in ACSC admissions)

Table 24: Mapping of ambulatory care sensitive conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Long Term Conditions</th>
<th>Healthy Patients</th>
<th>Frail Elderly/Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes complications</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>13%</td>
<td>70%</td>
<td>0.58%</td>
</tr>
<tr>
<td>Angina</td>
<td>13%</td>
<td>70%</td>
<td>0.58%</td>
</tr>
<tr>
<td>Asthma</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Convulsions and epilepsy</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Dehydration and gastroenteritis</td>
<td>13%</td>
<td>70%</td>
<td>0.58%</td>
</tr>
<tr>
<td>Ear nose and throat infections</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>COPD</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>44%</td>
<td>39%</td>
<td>17%</td>
</tr>
<tr>
<td>Other</td>
<td>13%</td>
<td>70%</td>
<td>0.58%</td>
</tr>
</tbody>
</table>
Diabetes complications, congestive heart failure, asthma, convulsions and epilepsy and COPD are all allocated 100% to those in the long term conditions group as these are chronic conditions. We recognise that there may be those in the Frail Elderly/Dementia category who also have long term conditions, however due to data limitations all chronic ACSCs are allocated to the long term conditions subgroup.

Due to lack of epidemiological data, asthma, angina, cellulitis and dehydration and gastroenteritis have been allocated based on the population distribution of the three patient categories. 100% of ear nose and throat infections have been allocated to the Healthy Patients group as the majority of these ACSC admissions are for young children who are often allocated to the Healthy Patients category.

The allocations for influenza are based on the average annual admissions rate for acute respiratory illness, broken down by age and clinical risk. Those at clinical risk are defined as patients with chronic respiratory disease, chronic heart disease, chronic kidney disease, chronic liver disease, diabetes, immunosuppression, asplenia or dysfunction of the spleen, cochlear implants and cerebrospinal fluid leaks.

1. **Healthy Patients**: Influenza admissions for those not at clinical risk are all allocated to Healthy Patients. Divide the total average annual influenza attributable hospital admissions by the total number of influenza admissions to get the proportion of influenza admissions attributed to the Healthy Patients patient category.

2. **Long Term Conditions**: Influenza admissions for those aged under 65 at clinical risk are allocated to the long term conditions patient subgroup. Admissions for those at clinical risk aged 65 and above are split between the long term conditions group and the Frail Elderly/Dementia group.

3. **Frail Elderly/Dementia**: Multiplying the proportion of those aged over 65 without a long term condition with the total number of influenza admissions for those 65 and over at clinical risk gives the number of influenza admissions for the Frail Elderly/Dementia group. This is then divided by the total number of influenza admissions to give the proportion of these admissions the Frail Elderly/Dementia patient subgroup accounts for.

The total number of people in the long term condition group is multiplied by the proportion of people with long term conditions aged 65 and over, to obtain the total number of people aged 65 and over with long term conditions. This is then divided by the total population aged over 65 to calculate the proportion of those over 65 with a long term condition.

Multiplying the total number of influenza admissions for those 65 and over at clinical risk by the proportion of 65+ with a long term condition gives the number of these admissions attributed to the long term conditions group. Adding this to the number of influenza admissions for those aged under 65 at clinical risk gives the total number of influenza admissions for the long term condition group, and dividing by the total number of influenza admissions gives the proportion of these admissions attributed to the long term conditions group.
Scaling up

As the patient subgroup only cover 95% of ACSC admissions and costs, the additional patients are mapped to one of the patient subgroups.

Table 25: Mapping of additional Patient Groups

<table>
<thead>
<tr>
<th>In-hours Effect</th>
<th>Patient Category</th>
<th>Mapping</th>
<th>UK Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>End of life</td>
<td>Frail Elderly/Dementia</td>
<td>164,702</td>
</tr>
<tr>
<td></td>
<td>Complex Needs Adults</td>
<td>Multiple long term conditions</td>
<td>3,015,173</td>
</tr>
<tr>
<td></td>
<td>Early Years</td>
<td>Healthy Patients</td>
<td>4,805,915</td>
</tr>
<tr>
<td></td>
<td>Maternity</td>
<td>Healthy Patients</td>
<td>2,431,743</td>
</tr>
</tbody>
</table>

Results

Table 26: Reduction in the number of admissions for ACSCs in the medium term

<table>
<thead>
<tr>
<th>Reduction in ACSC admissions (annual)</th>
<th>8%</th>
<th>11%</th>
<th>18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>34,300</td>
<td>47,200</td>
<td>77,300</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>26,000</td>
<td>35,700</td>
<td>58,400</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>1,500</td>
<td>2,100</td>
<td>3,500</td>
</tr>
<tr>
<td>Total</td>
<td><strong>61,900</strong></td>
<td><strong>85,100</strong></td>
<td><strong>139,000</strong></td>
</tr>
</tbody>
</table>
Table 27: Annual financial savings from reduced expenditure on ACSCs in the medium term

<table>
<thead>
<tr>
<th>Reduction in expenditure on ACSC admissions (annual, £m)</th>
<th>8%</th>
<th>11%</th>
<th>18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Conditions</td>
<td>87.8</td>
<td>120.7</td>
<td>197.5</td>
</tr>
<tr>
<td>Healthy Patients</td>
<td>54.9</td>
<td>75.5</td>
<td>123.6</td>
</tr>
<tr>
<td>Frail Elderly/Dementia</td>
<td>5.4</td>
<td>7.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Total</td>
<td>148.2</td>
<td>203.7</td>
<td>333.4</td>
</tr>
</tbody>
</table>

Table 28: Annual financial savings from reduced expenditure on ACSCs in the medium term (based on 8% reduction in admissions) – National split

<table>
<thead>
<tr>
<th>Reduction in expenditure on ACSC admissions (annual, £m)</th>
<th>Long Term Conditions</th>
<th>Healthy Patients</th>
<th>Frail Elderly/Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total UK</td>
<td>87.8</td>
<td>54.9</td>
<td>5.4</td>
</tr>
<tr>
<td>England</td>
<td>73.8</td>
<td>46.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Scotland</td>
<td>7.3</td>
<td>4.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Wales</td>
<td>4.2</td>
<td>2.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>2.5</td>
<td>1.6</td>
<td>0.2</td>
</tr>
</tbody>
</table>
B.4 Long term impacts
This section will present the approach taken to quantify long term impacts of general practice, where appropriate. This includes top-level pathway estimates, rather than the short term and medium term approaches.

Assumptions underpinning the analysis
• The rate of smokers by age and gender for Great Britain is assumed to apply to Northern Ireland.
• The analysis applies only to those aged 16 - 70.
• It is assumed that the cost of smoking to the NHS is distributed equally across all smokers.
• The lower bound estimated of cost of a smoker to the NHS based on data for England, and assumed to apply to the whole of the UK.

Increasing Smoking Cessation
This section presents the methodology used to examine the impact of general practice led interventions on smoking cessation.

Table 29: Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population estimates</td>
<td>ONS population estimates 2013</td>
</tr>
<tr>
<td>Proportion of the population who smoke by country</td>
<td>ASH Smoking statistics 2012</td>
</tr>
<tr>
<td>Age and gender breakdown of population estimates</td>
<td>ONS population estimates 2013</td>
</tr>
<tr>
<td>Potential decreases in ACSCs as a result of increased investment in general practice</td>
<td>Tian et al 2012</td>
</tr>
<tr>
<td>Smokers by age and gender</td>
<td>General lifestyle survey 2011 Great Britain59</td>
</tr>
<tr>
<td>Proportion of smokers who want to stop</td>
<td>ONS Smoking related behaviours and attitudes</td>
</tr>
<tr>
<td>12 month brief intervention and intensive intervention cessation rate</td>
<td>Stead et al 2008</td>
</tr>
<tr>
<td>12 month unaided cessation rate</td>
<td>Hughes et al 2003</td>
</tr>
<tr>
<td>Cost of smoking to the NHS</td>
<td>Callum et al 2011, Scarborough et al 2011, Oxford University research 2009</td>
</tr>
</tbody>
</table>

59 Estimates for those aged 16-19 are unreliable and any analysis using these figures may be invalid.
Detailed Methodology
The following methodology was used to quantify the potential savings to the NHS as a result of general practice led interventions for smoking cessation:

1. For each age group, the number of smokers in each UK country was calculated for each gender. This was done by multiplying the total population of each age group by the proportion of which are smokers and the proportion of the population are male/female. This is then summed over all age groups and genders to obtain the total number of smokers in each country.

2. The number of smokers in each country who want to quit is calculated by multiplying the proportion of smokers that want to quit by the total number of smokers in each country.

3. The unaided cessation rate, brief advice cessation rate and intensive intervention cessation rate are applied to the total number of smokers who want to quit in each country to calculate the number of cessations for each.

4. The number of unaided cessations is subtracted from the number of cessations as result of brief advice and number of cessations as a result of an intensive intervention to obtain the additional number of cessations as a result of general practice led interventions.

5. A range of estimated cost per smoker to the NHS is applied to the additional number of cessations resulting from brief advice and intensive intervention to obtain the potential savings to the NHS.

Results are presented in Section 3 of the report.

It is noted that a declining share of the population may be using general practice for smoking cessation (for example, due to alternatives such as the emergence of e-cigarettes). As such, this approach may lead to an over estimation of the impact of general practice.
Reducing Excessive Drinking

This section presents the methodology used to examine the impact of general practice on excessive drinkers achieving safe drinking levels.

Assumptions underpinning the analysis

- It is assumed that the GP patient survey results are representative of the whole population.

- In England, Wales and Northern Ireland, the proportion of respondents that had seen or spoken to their GP in the last six months was used as a proxy for the number of people seen in general practice a year.

- The proportion of those who presented at general practice who are excessive drinkers is for England and applied to the rest of the UK.

- The proportion of the population who are hazardous, harmful and dependent drinkers in England are applied to the UK. This is a limitation given numbers of hazardous, harmful and dependent drinkers is not homogeneous across the UK, although data availability varies.

- The analysis only considers the impact of general practice interventions on harmful and hazardous drinkers, and does not consider dependent drinkers. This is based on literature that suggests that for those already dependent on alcohol, brief interventions in general practice have little to no impact.

- The average cost of an excessive drinker is calculated for England and applied to the UK.

- The average cost of an excessive drinker is based on the cost of excessive drinking for all types of drinkers, including dependent, but applied only to those who are harmful and hazardous, risking over-estimation of the potential savings.

- The proportion of excessive drinkers who are hazardous/harmful is calculated using population estimates for those aged over 15.
Table 30: Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of patients presenting to general practice who are excessive drinkers in England</td>
<td>State of the Nation – Facts and Figures on England and Alcohol</td>
</tr>
<tr>
<td>Proportion of respondents that have seen or spoken to their GP in the last 6 months</td>
<td>England: GP Patient Survey 2014&lt;br&gt;Wales: GP patient survey 2008/09&lt;br&gt;Northern Ireland: GP patient survey 2010/11</td>
</tr>
<tr>
<td>Proportion of respondents that have seen or spoken to their GP in the last 12 months in Scotland</td>
<td>Scotland Health and care experience survey</td>
</tr>
<tr>
<td>Registered patients in 2013</td>
<td>England: HSCIC&lt;br&gt;Scotland: ISD Scotland&lt;br&gt;Wales: Registered patients and number of GP practitioners by practice stats 2013&lt;br&gt;N. Ireland: HSC data</td>
</tr>
<tr>
<td>Numbers needed to treat for one patient to reach safe drinking levels</td>
<td>Whitlock et al 2004&lt;br&gt;Jonas et al 2012</td>
</tr>
<tr>
<td>Proportion of drinkers identified using a short 2 question test combined with the CAGE questionnaire</td>
<td>Mitchell et al 2014</td>
</tr>
<tr>
<td>Cost of alcohol misuse to the NHS – England</td>
<td>HSCIC</td>
</tr>
<tr>
<td>Proportion of adults who are harmful, hazardous and dependent drinkers – England</td>
<td>State of the Nation – Facts and Figures on England and Alcohol 2007</td>
</tr>
<tr>
<td>Population estimates</td>
<td>ONS population estimates 2013</td>
</tr>
</tbody>
</table>

**Detailed methodology**

The potential savings to the NHS as a result of a general practice led multi-contact intervention with harmful and hazardous drinkers is quantified as follows:

1. Calculate the number of patients a GP will see a year in each UK nation by multiplying the total number of registered patients by the proportion that have seen or spoken to their GP in the last six months.

2. Multiply the number of patients seen by a GP a year by the proportion of those presenting to GPs who are excessive drinkers to calculate the number of excessive drinkers seen a year by GPs.

3. Multiply the number of excessive drinkers seen a year by GPs by the proportion that can be identified through 2 questions combined with the CAGE questionnaire, and a scaling factor to represent that not all patients will be screened.

4. Calculate the total number of hazardous drinkers in the UK. Repeat for harmful and dependent drinkers:

\[
\begin{align*}
\text{UK 15+ female population} & \times \frac{\text{Proportion of female adults who are hazardous drinkers}}{100} \\
\text{UK 15+ Male population} & \times \frac{\text{Proportion of male adults who are hazardous drinkers}}{100}
\end{align*}
\]

\[
= \text{Total number of hazardous drinkers in the UK}
\]
5. Calculate the proportion of excessive drinkers who are harmful or hazardous by dividing the total number of harmful or hazardous drinkers by the total number of excessive drinkers.

6. Apply the proportion of excessive drinkers who are harmful/hazardous to the number of identified excessive drinkers to calculate the number of harmful/hazardous drinkers identified by GPs each year, on which general practitioners can use a multicontact intervention.

7. Divide the number of identified harmful/hazardous drinkers by the numbers needed to treat for one patient to reach safe drinking levels to calculate the number of patients who will reach safe drinking levels as a result of the general practice led intervention.

8. Divide the total cost of excessive drinking to the NHS by the number of excessive drinkers to calculate the cost per excessive drinking. Multiply this by the number of patients who reach safe drinking levels to calculate the savings to the NHS.

Figure 21: Methodology to assess savings from reaching safe alcohol drinking limits

<table>
<thead>
<tr>
<th>Reaching safe alcohol drinking limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients GPs see a year</td>
</tr>
<tr>
<td>Number of patients presenting to GPs who are excessive drinkers</td>
</tr>
<tr>
<td>Number of harmful and hazardous drinkers presenting to GPs</td>
</tr>
<tr>
<td>Number of harmful/hazardous drinkers identified</td>
</tr>
<tr>
<td>Number of successful reductions to recommended drinking limits</td>
</tr>
<tr>
<td>Savings to the NHS</td>
</tr>
</tbody>
</table>

Numbers needed to treat:                   High                      Low

Results are presented in Section 3 of the report.
Appendix C
Case study on diabetes

In addition to modelling the short, medium and long term benefits of general practice, a longer case study has been undertaken to show the impact of general practice on one particular long term condition. Diabetes has been chosen for this longer case study.

C.1 Background
The growth in diabetes prevalence has accelerated in the past few years, with diagnoses increasing by 38% between 2011 and 2013, and the UK average prevalence currently stands at 6%. If current trends continue, it is estimated that by 2025 five million people in the UK will have diabetes. Projections of healthcare spending estimate that the share of total health resource expenditure on diabetes will rise from 10% today to 17% in 2035. Type 2 diabetes makes up 90% of all diabetes cases and is the main driver of increasing diabetes prevalence.

Diabetes currently makes up 10% of total health care spending, and is projected to increase to 17% of total spend by 2035. Diabetes related complications are the major cause of health care costs, with 80% of NHS spending on diabetes going into managing avoidable complications. The risk of hospitalisation for people with diabetes is almost twice that of those without the condition and once admitted their mean length of stay is 6.3 days compared to 3.5 days for those without a diabetes diagnosis.

GPs have a substantial role to play in reducing the number of diabetes related hospitalisations through the early diagnosis of Type 2 diabetes. Research has shown that there is a latent phase before diagnosis during which diabetic complications are developing, with many newly diagnosed patients showing signs of complications. Due to the high levels of contact GPs have with high risk individuals, it places them in an ideal position for clinical opportunistic case finding which is more cost effective than population screening, leading to earlier diagnosis and treatment, and reducing the risk of complications.

For those who already have Type 2 diabetes and complications, GPs play an essential role in case management. As much of Type 2 diabetes is managed through diet, exercise, regular monitoring of blood sugar it is important for patients to follow self-care plans. Pilot schemes have shown that investment into primary care achieves improvement in completed care plans, testing attendances and diabetes complication risk factors.

If there is no coordinated response to the rise in diabetes and prediabetes prevalence, an increase in the number of people with diabetes may lead to consequent increases in health expenditure and morbidity.

62 For example, see: Diabetes UK. 2013. State of the Nation England 2013.
63 For example, see: UK Prospective Diabetes Study (UKPDS) Group. 1998. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes (UKPDS 34).
64 For example, see: Tower Hamlets Integrated care pilot.
C.2 Early diagnosis: preventing complications

Diabetics are twice as likely as those without the condition of being admitted to hospital, and their mean length of stay is 6.3 days compared to the average of 3.5. Research has found that hospital costs are the major component of diabetes health care spending, with 80% of the total NHS spending on avoidable hospitalisations, and that hospitalisation costs were in turn driven principally by the presence or absence of complications (see Figure 22).

Diabetes increases the risk of developing one or more severe health complications, and is the leading cause of blindness in working age people, a major contributor to kidney failure, amputations and cardiovascular disease. Half of patients at the point of diagnosis already have complications as there is a latent phase before diagnosis when symptoms are not evident, but risk factors for micro and macro vascular complications are markedly elevated, and by the time diabetes is diagnosed it has already progressed significantly in severity.

The NHS health check program aims to identify people with and at risk of Type 2 diabetes, inviting people with certain risk factors for a check-up every 5 years. However in 2013, 18.5% of the eligible population were offered one. Currently there are estimated to be more than 1 million people in the UK with undiagnosed Type 2 diabetes but with increased clinical opportunistic case finding through GPs, this number may decrease, resulting in savings downstream. Increased access to general practice (through increased funding) could facilitate this process.

Furthermore, new types of interventions are being developed and innovative approaches to care are often being based on quantitative evaluation of the disease, for example the Archimedes model: a mathematical model of the anatomy, pathophysiology, tests, treatments, and outcomes pertaining to diabetes that could be applied to a wide variety of clinical and administrative problems.

---

66 Diabetes UK. 2010. ‘One million people in the UK unaware they have type two diabetes’.
C.2.1 Conclusion

Clinical opportunistic case finding will not only benefit patients allowing early treatment but also reduce overall health care expenditure. Although the management of diabetes requires expenditure, complications are the major cause of health care cost and prevention of Type 2 diabetes related complications should ensure significant savings downstream.

Greaves et al 2004:

**Intervention:** Computerised searching of routinely collected data identified high risk patients using BMI and age, factors easily generalised the majority of UK practices. Practice nurses were trained to run the case finding clinics, and high risk patients were invited for review.

**Results:** The study found that the number needed to test for either prediabetes or type II diabetes was only 12.8. It concludes that a simple and pragmatic case finding programme to stratify patients was feasible in general practice.

Furthermore, it was possible to run case finding clinics after only brief nurse training, and computer identification of patients for review took less than 1 hour per practice. The clinic time per patient was 10 - 15 minutes, comparing with a minimum of two hours and two appointments for oral glucose tolerance testing.

St Leonard’s Practice 2012:

**Intervention:** This practice has a policy of clinical opportunistic case finding for type II diabetes.

**Results:** 63% of new diabetes II diagnoses over the 3 years were due to clinical opportunistic case finding. For every case finding detected diagnosis made, 51.2 patients needed to be reviewed, and the average cost per case finding detected diagnosis was £377. A main strength is that these results were achieved in routine care, and review factors were easily extractable from electronic medical records.

The study concludes that almost two thirds of new cases of type 2 diabetes can be detected before symptoms are reported at reasonable cost by opportunistic case finding in general practice, without the use of extra resources.
C.3 Prediabetes: Preventing Progression
Type 2 diabetes is very often preceded by the condition prediabetes, where blood glucose levels are elevated above normal levels, but are not high enough to be diagnosed as Type 2 diabetes. In the UK, 35.3% of adults have prediabetes; its prevalence rising from 11.6% in 2003. People with prediabetes are 15 times more likely that people without the condition to have Type 2 diabetes, and research has concluded that if there is no coordinated response to the rise in prediabetes, an increase in the number of people with diabetes will ensue with a consequent increase in health expenditure and morbidity.68

It is possible to reverse prediabetes and the chance of doing on to develop Type 2 diabetes by up to 60% by losing a moderate amount of weight, adopting a healthy balanced diet and increasing physical activity levels. These interventions could be implemented through general practice, as illustrated below.

C.3.1 Conclusion
Implementing interventions to prevent the progression of prediabetes to Type 2 diabetes through general practice will likely result in fewer incidents of Type 2 diabetes on the NHS. This would lead to both social and financial benefits, with a healthier population, and relieve the financial strain of Type 2 diabetes on the NHS.

Figure 25: Key facts on diabetes
- 60% of type II diabetics have some degree of retinopathy
- Diabetics are 10 to 20 times more likely to go blind that people without diabetes
- Almost one in three people with type II diabetes develops overt kidney disease
- Type II diabetics have a twofold increased risk of stroke within the first 5 years of diagnosis compared to the general population
- 52% of fatalities in type II diabetics are due to cardiovascular disease
- The prevalence of depression is approximately twice as high in people with diabetes as it is in the general population
- Life expectancy is reduced by up to 10 years
- 1 in 20 will develop a foot ulcer in one year. More than 1 in 10 will result in the amputation of a foot leg
- Up to 70% of people die within 5 years of having an amputation as a result of diabetes

Diabetes Prevention Program:
Intervention: Participants were non-diabetic persons and were randomized into three groups, metformin (850g twice daily), lifestyle modification or placebo.

Lifestyle Modification:
Participants in the lifestyle modification group followed a goal based behavioural intervention, outlined below:

- Lose ≥ 7% of initial body weight and maintain this weight loss throughout the trial, through a low fat diet
- 150 minutes of moderate physical activities similar in intensity to brisk walking
- Monthly 1:1 counselling

Results: The lifestyle intervention reduced the incidence of type II diabetes by 58%, and metformin by 31% compared to the placebo. Although both interventions were effective, the lifestyle intervention was significantly more effective than metformin.

To prevent one case of diabetes during a period of 3 years, 6.9 persons would have to participate in the lifestyle intervention program, and 13.9 would have to receive metformin.

C.4 Diabetes Management
For patients that already have Type 2 diabetes, general practice plays an essential role in case management. With effective management of diabetes such as blood pressure and blood glucose monitoring, and regular foot check-ups, patients can significantly decrease the probability of complications.

Background: There was a rapidly growing prevalence of Type 2 diabetes with 7.1% of the population with disease. In 2008 it was recognised that diabetes care in Tower Hamlets was suboptimal, with high rates of hospital admissions for diabetes related complications, and little evidence of systematic diabetes care. They became a pilot site for integrated care and developed eight general practice networks each with funding of £200,000.

Intervention: All the general practices in this PCT were grouped into eight networks of four to five practices, each supported by a network manager. A multidisciplinary team developed a care package for Type 2 diabetes management, with financial incentives based on network achievement of targets. Key measures for improvement:

• Number of diabetes care plans completed
• Proportion of patients attending for digital retinal screening
• Proportion of patients achieving a number of biomedical indices:
  • Cholesterol and blood pressure joint target: 50% of patients to have a cholesterol value of ≤4.0 mmol/l combined with a blood pressure of ≤140/80 mm Hg.
  • Average HbA1c value – HbA1c or glycated hemoglobin is a form of hemoglobin that is measured primarily to identify the average plasma glucose concentration over prolonged periods of time. It is often used as a measure of a diabetic patient’s ability to control their blood glucose levels.

Components of the care package:

• Active patient recall for an initial appointment to collect biomedical indices (BMI, blood pressure, renal function, HbA1c, retinal screening, smoking status, foot health check).
• Case planning review: a 30 - 40 minute meeting with a doctor or nurse trained in motivational interviewing, in which goals for the coming year are tailored to the patient’s needs
• Interim discussions through the year review elements of the care plan

Figure 26: Tower Hamlets Integrated Care Pilot 2008
Results

In addition to these step changes in key measures, in 2012 Tower Hamlets ranked top among all PCTs in England for cholesterol and blood pressure control, despite being ranked as the third most socially deprived local authority in England.

Conclusion: The study found that significant clinical improvements in diabetes care can be made by a combination of financial and organisational investment into networks of general practices, using incentive payments alongside educational facilitation with specialist input.
C.4.1 Conclusion

General practice plays a key role both in carrying out testing required to monitor risk factors such as blood pressure and blood glucose levels, and in facilitating self-management. Investment in general practice to develop care packages and interventions will ensure better diabetes management and in turn fewer hospitalisations.

General practice also holds significant value when we consider Type 2 diabetes as a co-morbidity. Research has shown that depression affects approximately a quarter of diabetes sufferers, and is associated with poorer self-management, metabolic control and higher mortality. One three year study found that compared with non-depressed patients with diabetes, those with minor depression had a 1.67-fold increase in mortality, and those with major depression a 2.30-fold increase\(^69\). In addition to worse clinical outcomes, depression as a co-morbidity to diabetes has been shown to increase health care expenditure, with research showing that co-morbid health problems are associated in a 45 - 75% increase in health care costs for those with long term conditions, increasing the cost per person by approximately £3,910 to £5670 a year.\(^70\)

Collaborative care programmes in general practice play a key role in managing depression in patients with Type 2 diabetes, leading to improved health outcomes. A number of studies have been carried out that utilise practice nurses as patient managers that have found improvements in depression, diabetes management and lifestyle. One American study also found that an intervention of specialised nurses delivering depression treatment in primary care clinics led to a net economic benefit of the intervention of around $950 per patient treated.\(^71\)

Intervention: A collaborative care model was implemented in general practice, consisting of screening and case management, with practice nurses playing a key role. Practice nurses were trained to screen for depression using the Patient Health Questionnaire as part of a diabetic patient’s disease management during their routine visits.

Patients visited the practice every three months for a 45 minute nurse consultation followed by a 15 minute consultation with their GP in which stepped care was offered if their depression scores had not improved. Nurses worked with patients to set goals to encourage self-management, and during future consultations addressed any barriers to achieving these goals.

Results: At 12 months there was a significant reduction in the mean depression score of patients receiving the intervention, falling from 10.7 to 6.6 and nearly 70% of patients having a lower depression score than at baseline. Those with moderate to severe depression scores saw an even greater improvement, with their mean depression score dropping by 6.4, from 14.4 to 8.0.

Their 10-year cardiovascular disease risk calculated with the risk equations showed a significant 2.9% fall in cardiovascular risk, with a trend (although not significant) towards improvements in weight and systolic blood pressure. The intervention also led to significant changes in lifestyle. Exercise in the intervention group increased by 19% with a 16% increase in referrals to exercise programmes, compared to no changes in exercise in the control group and a fall in referrals to exercise programmes by 5%.


\(^{70}\) For example, see: The Kings Fund. 2012. Long-term conditions and mental health: The cost of co-morbidities.

\(^{71}\) Simon et al. 2007. Cost-effectiveness of Systematic Depression Treatment Among People With Diabetes Mellitus.
Appendix D
Shorter case studies

As outlined in the main body of the report, this study aims to quantify the benefits of general practice where possible. However, a number of case studies are also presented to show qualitatively the benefits that general practice can deliver. In particular, these case studies focus on innovative approaches that have been taken in certain locations across the UK. The aim of these case studies is to show the wider benefits that general practice can deliver, that is, over and above the impacts that are quantified in this study.

D.1 Improving COPD Care: Chiltern CCG
It is noted that chronic obstructive pulmonary disease accounts for:

- 13% of ACSC admissions
- 14% of ACSC hospital admissions costs

With the aim of reducing hospital admissions in Buckinghamshire, a general practice led initiative was developed that engaged all 35 practices in Chiltern CCG:

- Each practice nominated clinicians to form a respiratory doctor and nursing team
- Nominated clinicians underwent distance learning programmes
- The teams identified COPD patients and ensured they were regularly monitored, reviewed and encouraged self-management
- Ensured all practices were equipped with pulse oximeters and micro-spirometers to screen smokers over 35 to identify undiagnosed COPD patients

Results suggest that there has been a 30% decrease in hospital admissions for COPD patients in three years.

D.2 GPs with Ambulance Service
Following a winter pilot of GPs working 19 hour shifts over weekends in ambulances, South Worcestershire, Wyre Forest and Redditch and Bromsgrove CCGs are funding an extended pilot programme with GPs working alongside paramedics:

- GPs are called out to emergencies by the control room or by paramedics themselves when they feel that the patient would be better dealt with by a GP than taking them to A&E.
- Paramedics and call handlers are given a list of medical conditions that may be suited to GP intervention.

Result:
- Since its launch in 2012, over 2,900 emergency calls have been dealt with by GPs, preventing over 2,300 A&E attendances.
- It is estimated that so far the scheme has resulted in over £2.5 million in savings to the NHS.

Figure 28: Winter Pilot: GP Case Outcomes
D.3 GPs with Ambulance Services: An illustrative case study

Doris is an elderly lady in her 80s who lives alone with diabetes and hypertension, but is generally fit and well. She develops a severe balance problem and vomiting, becoming increasingly unwell and was confined to her bed upstairs as she was too unsteady to use the stairs. As she had no family locally and her GP surgery was closed she called 999 for an ambulance.

Doris was first seen by a paramedic who traditionally would have taken her to A&E to be assessed, following which it is very likely she would have been admitted as she would not have been able to travel home and care for herself. However, due to the GPs with ambulance scheme, the paramedic was able to call in the local GP who gave her an injection to settle the dizziness and sickness, and tablets to take until her GP could visit the following day, who arranged for her daughter to stay with her for a few days and made a referral to the community physiotherapy to support her mobilisation.

Through the GPs with ambulance scheme, a hospital admission was avoided.23

D.4 Cardiology Discharge Project: Nottingham

In 2012 concerns were expressed by Nottingham GPs and cardiology consultants that too many cardiology patients were being asked to attend hospital for unnecessary follow-up outpatient appointments. To investigate whether many of these patients could be more appropriately monitored by their GPs instead a pilot was launched:

- GPs and consultants shared patient information using a password controlled system in order to assess them, with results indicating that a large proportion could be safely discharged into general practice.

Result:

By the beginning of April 2013, reviews had been carried out on 1,090 patients with 720 discharged from hospital outpatient systems. Recent hospital admissions data has shown a decrease in cardiology outpatient attendances.

![Figure 29: Patient review outcomes](image)

- **Nottingham University Hospital follow up**
- **Discharged with a management plan**
- **Discharged with pacing clinic follow up**
- **Discharged with echocardiography register follow up**
- **Discharged completely**
- **Not yet reviewed**
- **Other**

---

23 NHS South Worcestershire Clinical Commissioning Group. 2014. GPs with the Ambulance Service.
D.5 Consultant Link
City of London and Hackney, Newham and Tower Hamlets CCGs collaborated to develop a local enhanced service for severe and enduring mental illness recovery after data showed that too many patients were remaining as outpatients without support.

The service aimed to shift settings of care through discharging stable patients into a stepped down service supported by mental health workers and GPs in primary care:

- Patient data was collected through community mental health teams
- Guidelines for stepping down were developed between primary and secondary care clinicians and patients assessed to see if they are ready to be discharged into primary care

Result:
- Over 1,400 patients over 2 years have been successfully discharged
- Patients felt that through talking about recovery they were improving and it was nice to have a named contact and set appointments
- In Newham GPs were also able to do physical health checks on carers
- GPs have increased their confidence in dealing with mental health issues which has been linked to decreased referrals of mental health patients to secondary care

D.6 Increased GP Access Pilot: Central Manchester
Central Manchester CCG has launched an increased GP access pilot with the aim of reversing the increase in A&E attendances through:

- 96 additional GP appointments each week in the early evenings and for 3 hours per day on weekends
- Consultant advice lines available to GPs for six specialties
- GP in-reach to hospital patients to support discharge
- Local specialist persistent pain service

Result:
Although the scheme has only been in place for six months, a 2.3% fall in A&E attendances has already been seen.

Following an initial formal evaluation it was found there was a 23% fall in attendance at the primary care emergency centre.

20% of patients attending the additional evening primary care clinics said they would have attended A&E if the appointment had not been available.

D.7 WebGP: London
Hurley Group piloted an online patient service over six months in 20 London GP practices, this entailed:

- Symptom Checker: Help confirm that GPs are the right service for the patient
- Self Help guides
- Sign posting: Directing patients to alternative services such as pharmacy
- 24/7 phone advice: Patients can request a call back within 1 hour
- E-Consults: Patients submit a questionnaire to their GP for a response within 1 working day. GPs can analyse the questionnaire answers to determine whether the patient needs a prescription, appointment or phone consultation

Figure 30: Actions if the service did not exist
D.8 Mental Health Primary Care Service: Croydon

Croydon CCG found that many patients with serious mental illnesses that were being treated by the low intensity treatment team became very stable after a period of treatment and no longer required secondary care. In addition to this patients with mental illnesses are at a higher risk of physical problems, but there was a lack of mental and physical health care integration. To address these concerns a programme was launched:

• The low intensity treatment team was decommissioned and savings from this were used to invest in the primary care mental health support service.

• Investment in a GP local enhanced service to support practices in delivering health care to patients with stable, low risk serious mental health illnesses currently managed in secondary care.

• Patients assessed as suitable are transferred into primary care following a review by practice staff.

Result:

• Savings of £11,000 per average sized practice in addition to £414k per CCG

• 14% of patients said they would have gone to A&E or a walk in centre if the service did not exist

D.9 Discharging stable mental health patients: East London

City of London and Hackney, Newham and Tower Hamlets CCGs collaborated to develop a local enhanced service for severe and enduring mental illness recovery after data showed that too many patients were remaining as outpatients without support.

The service aimed to shift settings of care through discharging stable patients into a stepped down service supported by mental health workers and GPs in primary care:

• Patient data was collected through community mental health teams

• Guidelines for stepping down were developed between primary and secondary care clinicians and patients assessed to see if they are ready to be discharged into primary care

Result:

• Over 1,400 patients over 2 years have been successfully discharged

• Patients felt that through talking about recovery they were improving and it was nice to have a named contact and set appointments

• In Newham GPs were also able to do physical health checks on carers

• GPs have increased their confidence in dealing with mental health issues which has been linked to decreased referrals of mental health patients to secondary care

Result:

At 12 months:

• 9 patients fully discharged into GP care

• 30 patients working towards discharge stage

• Up to 500 patients identified for screening for service eligibility

• An estimated gross QIPP saving of £150,000
D.10 Children’s Clinic: London

**Background:** In late 2008, Churchill Medical Centre examined their attendances in children’s A&E and found that although they were open late every day, they did not see a large number of urgent appointments for children after midday despite large numbers of children in A&E.

**Intervention:** The practice rebranded an existing GP led afternoon clinic as a children’s urgent care clinic, and consulted patients on the best opening times. Based on the feedback they received, they ran the clinic from 4:30pm to 7pm on weekdays, and made an effort to publicise the service by contacting their patients, particularly those who had visited A&E in the past.

**Results:** After 12 months there has been nearly a 40% decrease in in-hours attendance at A&E for their registered patients under 16. Furthermore, patients are travelling further to be seen at within the practice than they would have to do to visit A&E. With reduced attendances and length of stay, the scheme has resulted in considerable savings.

D.11 Children’s Clinic: Swindon

This year a new children’s urgent care clinic dedicated to treating out of GP hours has trialled at Carfax NHS Medical Centre, aimed at reducing unnecessary A&E visits. The clinic runs weekdays between 5pm and 8pm, and treats children with non-life-threatening conditions. Parents who can’t get an appointment with their GP on the day can call the clinic and will receive advice and guidance from a nurse practitioner. If it’s felt necessary they will arrange an appointment with the clinic.

Between January and May, 579 children have been treated, with parents redirected to the clinic through 111 away from A&E. The pilot was supposed to end in May but has been so successful that it has been extended.

D.12 Children’s Asthma Service: South Essex

**Background:** In response to increasing demand for urgent asthma care in A&Es in South Essex, a 24 hour nursing initiative was developed for children with requiring urgent asthma treatment.

**Intervention:** Patients are able to contact the on-call nurse that follows triage algorithm to determine if the condition can be managed through advice, a visit from the nurse or if an ambulance is necessary. Nurses were trained in assessing and treating asthma conditions, and detailed triage algorithms were developed to ensure that the correct line of action was undertaken. Each intervention includes education for the patient and their carer about self-managing asthma.

**Results:** The scheme has resulted in net annual savings of £20,747 from reductions in A&E attendances and hospital admissions. Only 17% of the 200 patients enrolled went to A&E, compared to 45% before the scheme, and 14% were discharged from the outreach service due to increased parental confidence in managing their child’s condition and decreased asthma exacerbations compared to 7% the year before the scheme.

The scheme also had high patient satisfaction:

- 100% of responding parents/carers said they were happy with the care their child received
- 100% of respondents happy with the knowledge the paediatric community nurse had about their child’s condition
- 100% of respondents felt confident to care for their child’s asthma when the nurse left their home
- 100% of respondents felt they were treated with dignity and respect at all times.