CENTRE FOR WORKFORCE INTELLIGENCE

In-depth review of the general practitioner workforce

Final report

July 2014

www.cfwi.org.uk

Table of contents

1. Executive summary

The Centre for Workforce Intelligence (CfWI) was commissioned by the Department of Health (DH) and Health Education England (HEE) to conduct an in-depth review of the general practitioner (GP) workforce in England. This is a medium-term strategic review looking ahead to 2030, designed to provide the evidence base for forecasting workforce demand and supply, to enable sustainable improvements in planning for the GP workforce of the future. The focus of this review is on GPs who have completed their Certificate of Completion of Training (CCT holders).

The CfWI concludes that the current level of GPs being trained is inadequate and likely to lead to a major workforce demand-supply imbalance by 2020 unless action is taken. The CfWI recommends that HEE consider a substantial increase in GP training numbers. We also propose a number of measures to help boost workforce supply, particularly in the short term, given the significant lead-in time in training new GPs. The CfWI worked with the General Practice Task Force on this review.[1]

Preliminary findings

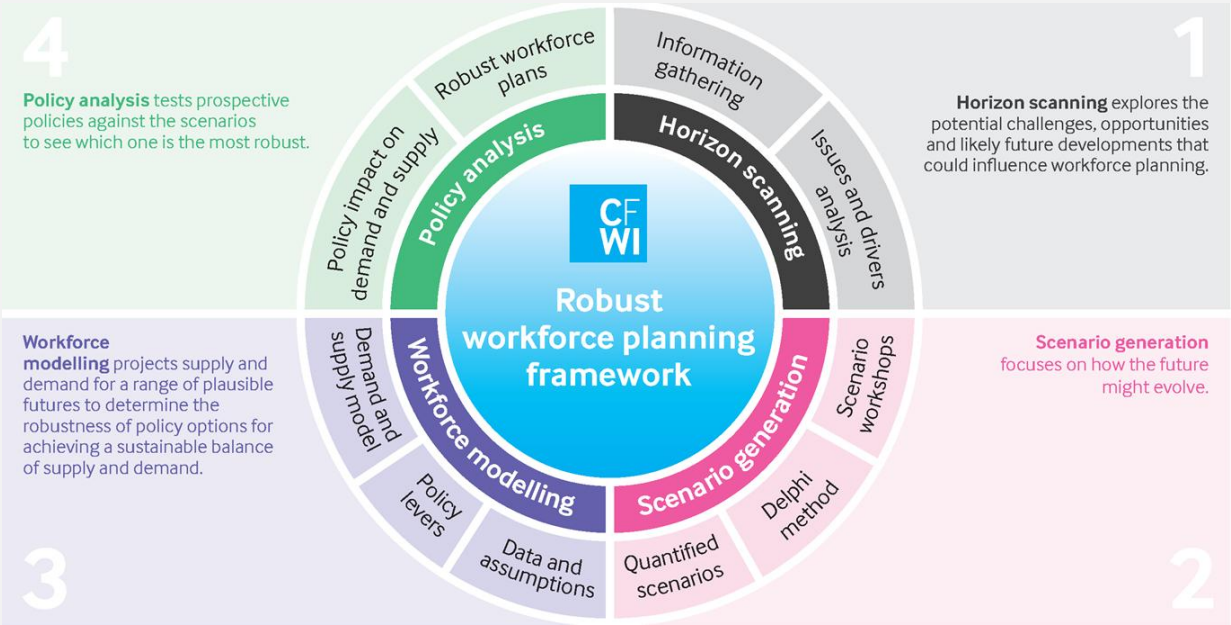
This final report builds on the *GP in-depth review: Preliminary findings* report published by the CfWI in March 2013, which was shared with stakeholders as part of the programme of activity to inform this work. Since that report, the CfWI has updated its GP training and workforce numbers and refined several of its modelling assumptions (as detailed below). It has also reverted to a standard workforce supply baseline which shows what would happen if current trends in training, workforce attrition, retirement, and participation rates were carried forward over the projection period. This approach is a departure from the *Preliminary findings*, where the supply baseline assumed that GP training posts were increased to the Government's former target of 3,250. That target was replaced by the new HEE mandate, which has a longer-term objective to ensure that 50 per cent of medical specialty trainees choose GP training.

Our approach

The CfWI's robust workforce planning approach was used to conduct this in-depth review, as outlined in Figure 1. This enabled the CfWI project team to draw on the expertise of more than 150 stakeholders, including those who participated in a series of four national roadshows in March and April 2013. Stakeholders helped identify the potential challenges, opportunities and likely future developments which could influence the planning of this workforce. They also helped to develop six challenging, but plausible, scenarios which the CfWI team modelled to illustrate how the future may evolve. The CfWI also worked with stakeholders to better understand the impact of certain policies and to explore possibilities for bringing supply and demand into balance.

[1] For details of the GP Task Force, see Section 2.3 and Annex G.

Figure 1: The CfWI workforce planning approach



Source: CfWI

Key findings

Growth in the GP workforce has not kept pace with the increase in the number of medical consultants or population growth. The number of GPs rose by 23 per cent on a full-time equivalent (FTE) basis to 32,075 (excluding registrars, retainers and locums) between 1995 and 2013. By contrast, the number of consultants in other medical specialties more than doubled over the same period to 39,094 (FTE).

On a per capita basis, the number of GPs per 100,000 people in England has fallen to 59.6 GPs per 100,000. The CfWI expects the GP per capita ratio to return to its 2009 peak of 61.5 GPs per 100,000 by around 2015.

Boosting the number of GP trainees is proving difficult. Although fill rates have been high and there has been a modest increase in applications for GP training in the last two years, the number of accepted offers to GP training posts in 2013-14 remained below its 2010-11 peak.

The GP workforce is getting younger and more female. By 2030 the average age of GPs will be lower than now, and the number of GPs in their 30s is set to increase by around 6,700.

The increase in women choosing a medical career and entering general practice has caused a significant shift in the gender balance in what was once a male-dominated specialty. The CfWI expects women will soon form the majority of the GP workforce on a full-time equivalent basis.

As a result, it is likely that a larger number of GPs in training will be needed to ensure a full-time equivalent level of workforce supply over the period of this review, as a higher proportion of women work less than full-time for some periods during their GP career.

There is considerable geographical variation in the distribution of GPs. Access to GPs remains unequal between areas of high and low deprivation, ranging from 62.5 to 76.2 GPs per capita across England.[2]

GP coverage is especially low in the North West and North East, but there are underserved localities across most of the country. Nine of the 13 local education and training boards (LETBs) contain both highest and lowest areas of deprivation, indicating significant intra-regional variation.

The geographical distribution of GPs is also linked to regional training capacity and programmes, with most GPs taking their first job in their region of training.

The age of GPs also shows considerable variation, with London in particular having an older GP workforce. Urban areas are more likely to have fewer GPs per capita and, on average, older GPs than rural areas.

Simply increasing the supply of GPs will not necessarily lead to a more equal distribution, as several studies have found. Reducing geographical inequity in access to GP services requires targeted area-level policies, including increasing GP training opportunities in those areas with the poorest coverage.

The GP role has become broader and more complex. Research indicates that the role of the GP has expanded over the past decade, with increasing and competing demands. A significant proportion of a GP's time is now spent on non-clinical responsibilities, including working with the new clinical commissioning groups (CCGs). These additional responsibilities may be reducing the time available for direct patient care.

GPs are also increasingly seeing patients with long-term conditions, and often complex multi-morbidity. Such patients generally require longer and more frequent consultations, and more complex case management.

The CfWI notes that the DH has accepted in principle the Royal College of General Practitioners' (RCGP) case for extended GP training in recognition of these changes in the GP's role.

General practice activity and workload has increased substantially for GPs and other practice staff. Patient demand for general practice services has shown strong growth in recent decades. The latest available GP workload survey (2006-07) and activity and consultation rate data (2008-09) point to longer average consultation times, more consultations per patient (particularly for older people), and more case complexity than a decade or two ago.

General practice consultation rates per patient rose by 41 per cent between 1995-96 and 2008-09 (HSCIC, 2009), largely due to an increase in consultations for patients aged over 60. With the GP workforce growing at a slower rate than practice consultations, most of the increase in activity was met by an increase in practice nurse numbers and in consultation rates.

There is no recent published data on GP activity in England. However, if since 2009 activity had continued to rise at its historical growth rate, there would have been around 340 million general practice consultations in 2013 (or 1.3 million per weekday). This compares with 15 million admissions to NHS hospitals (planned, waiting list and emergency) in 2012-13.

[2] These per capita ratios are not comparable with others cited in this report as they are based on Department for Community and Local Government (DCLG 2011) estimates rather than the latest Office for National Statistics (ONS 2013) estimates.

In addition, both recent governments have emphasised the importance of transferring some patient care from hospitals into the community. If implemented, this may have significant implications for future GP workload. Likewise, the Government's recent commitment to a named accountable clinician to coordinate care for everyone aged 75 and older is likely to add to existing GP workloads.

The available evidence suggests the GP workforce is under considerable strain and current levels of activity may not be sustainable in the face of rising patient demand. Many of the GPs the CfWI spoke to across England said they found the current workload challenging to manage. Reports of stress and burnout were common. The *Seventh National GP Worklife Survey* (Hann, et al. 2013) corroborates those reports, finding falling job satisfaction among GPs, the highest levels of stress since the start of the survey series in 2006, and a substantial increase in the proportion of GPs intending to quit direct patient care within the next five years.

Despite significant data limitations, the CfWI's assessment of the available evidence on the demand for GP services points to a workforce under considerable strain, with a slowly growing GP workforce unable to keep up with increasing patient demand. Demand pressures have been compounded by a decline in real funding levels and in the number of GPs per capita in recent years. As a result, the CfWI considers that current workforce levels are not sustainable. Without a significant increase in size, the GP workforce will be insufficient to adequately meet expected patient demand.

The CfWI is concerned by major gaps in the evidence base on GP activity, workload and practice workforce. Despite the scale and importance of primary care in the NHS, surprisingly little is known about what GPs do. The most recent workload survey was in 2006-07 and the latest data on activity and consultation rates is from 2008-09.

Although the Health and Social Care Information Centre (HSCIC) is developing the General Practice Extraction Service (GPES), which may be able to support this kind of work in future, the CfWI understands they have not yet been commissioned to carry out any such work.

Likewise, there is almost no reliable data on locum GPs – a neglected part of the workforce which performs an increasingly prominent role in the delivery of primary care services. There are also significant gaps in workforce data on the wider practice workforce (including practice nurses, direct patient carers, practice managers, physician associates and advanced nurse practitioners).

What the CfWI's modelling shows

The modelling shows that current numbers of GP trainees are inadequate and are likely to lead to a major demand-supply imbalance by 2020 under a wide range of scenarios. The CfWI came to this conclusion by first modelling a baseline supply projection to show how many GPs there are likely to be in the future if the number of training posts remains the same as their average over the past five years. This estimates that the GP baseline workforce supply will increase by 9 per cent – or 2,740 extra GPs – by 2020, and by 19 per cent – or 6,200 extra GPs to around 38,280 – by 2030 (FTE basis), compared with the 2013 level of 32,075 FTE.

The CfWI then compared this baseline supply projection with a number of scenarios relating to workforce demand. They did this to test whether supply would match demand for each of the plausible scenarios. As Figure 2 shows, all six of the scenarios modelled show a large demand-supply gap emerging by 2020, widening even further by 2030. None of the six scenarios indicates either demand and supply in balance, or a GP oversupply. The CfWI's conclusion is that there is a clear risk of a major demand-supply imbalance emerging by 2020 unless there is a significant boost to GP training numbers.

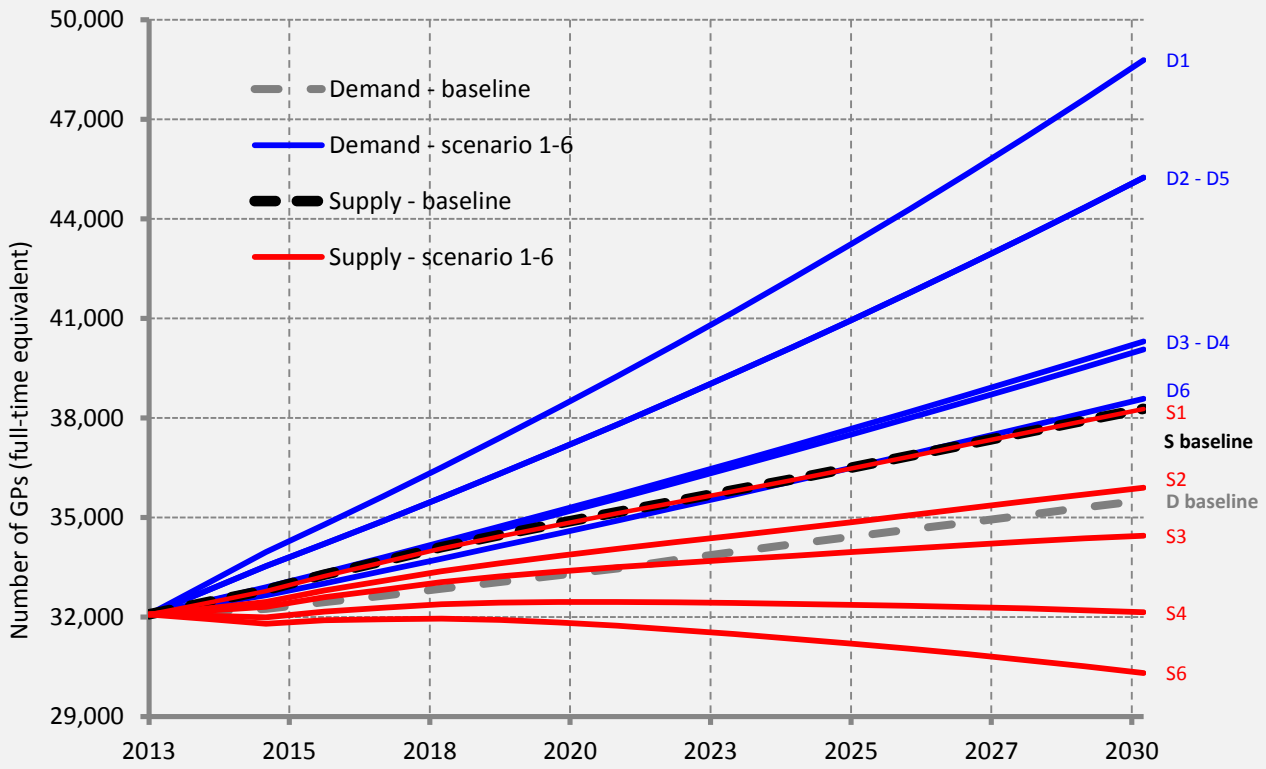
The six scenarios are summarised in Table 1. Please note that these driving forces and scenarios were developed via a tried-and-tested process by a diverse group of stakeholders. They do not, therefore, represent the views of any single organisation such as the CfWI, the DH, HEE, or any professional body.

Table 1: Scenario summary: main driving forces

(S1) Scenario 1: 'Happy GPs, excellent patient care'	(S2) Scenario 2: 'GPs good, commissioners bad'	(S3) Scenario 3: 'Right plan, but wrong tools'	(S4) Scenario 4: 'Meltdown in care'	(S5) Scenario 5: 'Technology through regulation'	(S6) Scenario 6: 'Rise of the machines'
Patient-driven workforce development		Professionally driven workforce development		High technological regulation	Low technological regulation
Perceived increase in the status and attractiveness of the GP profession	Perceived decrease in the status and attractiveness of the GP profession	Perceived increase in the status and attractiveness of GP profession	Perceived decrease in the status and attractiveness of GP profession	Reliable products with public buy-in	Unreliable products

Source: CfWI GP scenario generation workshop

Figure 2: GP demand and supply projections for the six scenarios*

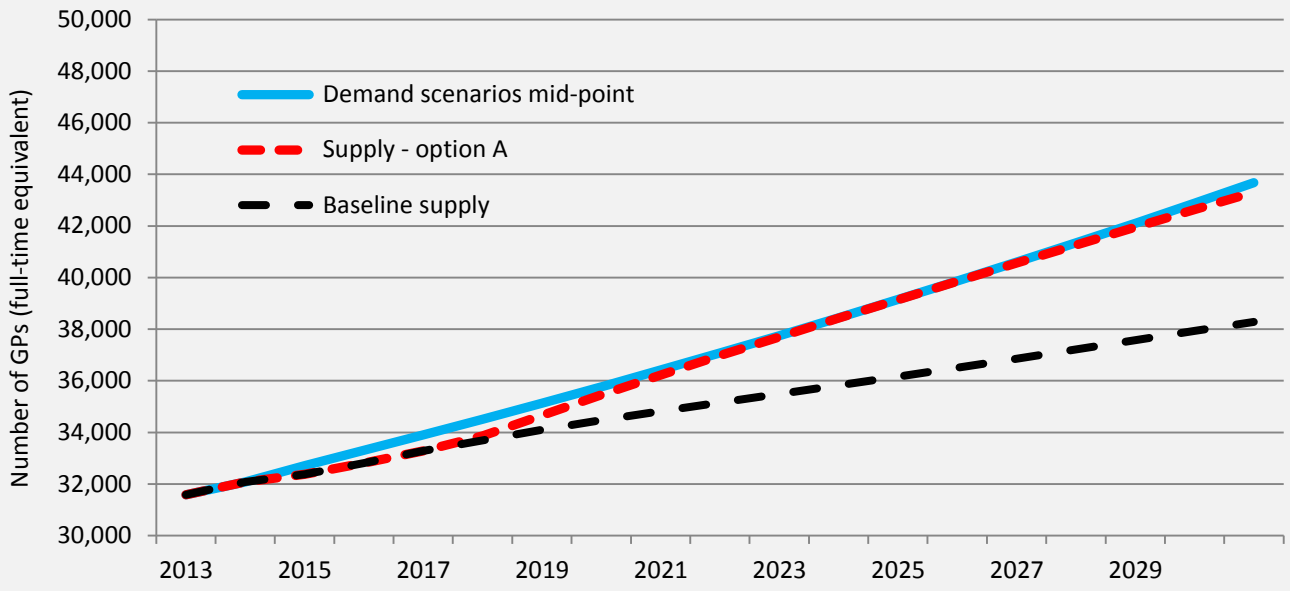


Source: CfWI medical workforce system dynamics model for England
* Baseline demand is lower than all six demand scenarios as it only reflects demographic drivers

How much would training numbers need to increase to bring GP workforce supply and patient demand into balance over the medium term? We modelled three policy options to help illustrate the possible effect of a boost to workforce supply on the demand-supply gap.

The first supply option – policy option A (Figure 3) – looks at how many training posts would be needed to bring the baseline supply in line with the mid-point of our six demand scenarios by 2020. We estimate this would require around a 20 per cent increase in GP training posts from their current 2,744 to 3,280 by 2015-16. This option would see demand and supply remain broadly in balance from 2020 through the remainder of the projection period to 2030.

Figure 3: Policy option A – impact of an increase in GP training to boost baseline supply to match the mid-point of the demand scenarios by 2020



Source: CfWI medical workforce system dynamics model for England

The CfWI also modelled two other policy options for increasing GP training in order to bring workforce supply in line with expected patient demand over the medium term. These options require a larger short-term boost to training posts. Policy option B would boost the midpoint of the six supply scenarios to match the midpoint of the six demand scenarios by 2020, while policy option C would aim to achieve this by 2030.

Policy option B would require a 51 per cent increase in GP training posts to 4,145 by 2015-16, but is projected to lead to oversupply for the subsequent decade to 2030, so if implemented would require GP training numbers to be substantially pared back after their initial boost. This may prove a difficult (and expensive) policy to implement successfully.

Policy option C would require a 42 per cent increase in GP training posts to 3,905 by 2015. It would bring demand and supply in balance by 2022, only a little later than the other two options. Like option B, however, the CfWI doubts its practicality as it would require either substantial additional funding or a large offsetting reduction in non-GP postgraduate medical training posts.

An important caveat to all three policy options is that, as modelled, they do not seek to take into account any other actions which might be taken to boost effective workforce supply or better manage patient demand.

The CfWI's assessment is that a significant, sustained and immediate boost to GP training numbers is necessary to mitigate the risk of a major demand-supply imbalance emerging by 2020. An increase in GP posts as per policy option A would be more achievable and affordable than the other options modelled. However, given the significant lead-in time in training new GPs, it would not be able to address short-term demand pressures and may also be insufficient – on its own – to fully meet expected medium-term demand.

Other measures are needed to boost workforce capacity and reduce supply risks. The CfWI understands that a range of measures (discussed below) are under consideration by HEE and the GP Task Force. If implemented they could significantly boost the general practice and primary care workforce over the short term.

There is also a role for commissioners in developing more effective and integrated models of primary care service delivery which better address patient demand, though the impact would be more medium term.

If substantive supply measures are introduced alongside the proposed boost to GP training posts, it would be appropriate for the increase in training to be towards the lower end of the policy option range outlined.

The CfWI also modelled several potential supply or demand shocks that risk limiting GP workforce supply:

- the introduction of extended GP training
- a wave of early retirements
- increased GP emigration.

An extension of GP training from three to four years could exacerbate workforce supply pressures in the short term. The CfWI's sensitivity analysis shows that extended GP training could see one year of zero workforce growth and a sustained reduction in workforce size over the projection period. But, it might also mitigate its own impact in the medium term if the system can make the most of the fourth year trainees' service delivery contributions and if workforce quality and productivity improves.

The CfWI also modelled the impact of a possible wave of early GP retirements over the next five years due to pension changes, the possible impact of revalidation and the new GP contract introduced in 2013. This would have a smaller and more short-lived impact, reducing GP numbers by around 480 (headcount basis) by 2018.

A sustained increase in net emigration (modelled as higher workforce attrition for GPs under 45 through to 2030) potentially has a bigger impact. Although initially quite modest, by 2020 the reduction in GP supply is almost 1,000 FTE posts and by 2030 around 3,500 – an 8 per cent reduction from the CfWI's baseline projection. The CfWI recommends the system considers ways to minimise the risk of rising GP emigration.

Note that the discussion above in no way constitutes a policy recommendation, nor is it a prediction by the CfWI. It is simply an exploration of possible risks and their potential workforce impacts.

Both patient demand and practice operations could be managed more effectively. While the CfWI's central recommendation is to boost workforce supply, there is considerable scope for GPs to improve ways of working as well. Possible solutions include:

- enacting changes to the general practice skill mix
- reducing the number of missed appointments
- increasing the use of technology to interact with patients
- managing back-office functions more effectively.

Such gains would help to ensure any remaining demand-supply gap is closed.

These solutions are not new. There are many examples of innovation in general practice, and GPs have been adjusting their skill mix for decades. For example, between 1995-96 and 2008-09, the proportion of consultations performed by practice nurses rose from 21 to 34 per cent (HSCIC, 2009).

The CfWI has assumed modest productivity gains (0.4 per cent per annum) in its demand modelling, in line with the long-term NHS average. However, this may underestimate recent GP productivity growth and the potential for future efficiency improvements.

General practices are moving towards broader primary care services delivered at greater scale. General practices face significant consolidation, and moves to greater coordination and collaboration. The number of 'single-handed' practices continues to fall year on year, while very large practices now see around one in seven patients.

The CfWI expects this consolidation to continue, as larger practices have greater flexibility and are better able to absorb cost pressures. We also expect the growing number of very large GP practices (including federations of practices) to coordinate a broader range of primary care services across multiple sites and, to some degree, extended hours.

Recommendations

The CfWI's key recommendation is for Health Education England to consider a substantial and sustained increase in GP training numbers, coupled with other measures to boost workforce supply. The CfWI reaffirms its previous recommendation (CfWI, 2011a) for a substantial increase in GP training posts. It considers that achieving and maintaining a substantial boost to the number of GPs in training is necessary to avoid major demand-supply imbalance, and should be the top workforce planning priority. In addition, the CfWI sees merit in boosting the wider primary care clinical workforce and exploring new models of primary care delivered at greater scale.

In previous reports (CfWI 2011a, 2013a), the CfWI's assessment was that the former Government's former target of an increase to 3,250 GP training posts per annum was likely to be broadly appropriate. The CfWI's latest modelling provides a range rather than a point forecast, acknowledging the inherent uncertainty about future GP demand and supply. The modelling shows that an increase in GP training posts of between 20 and 42 per cent is needed to bring workforce supply in balance with expected demand over the medium term. This is equivalent to an additional 536 to 1,161 Specialty Training 1 (ST1) posts per annum, compared to 2013-14.

Provided the increase in training is accompanied by a range of other substantive measures to boost the effective GP workforce supply, such as those the CfWI understands are being proposed by the GP Task Force, the CfWI recommends that the increase in training be towards the lower end of the option range: around 3,280 posts per annum (around a 20 per cent increase on 2013-14 accepted training offers). If however other measures to boost effective supply are not implemented, a larger increase may be warranted.

Some progress has already been made. The HEE (2013b) *Workforce plan for England* proposes an increase of 222 GP training commissions in 2014-15. If achieved, this would see GP training places increase by 8 per cent.

The proposed increase would be most effective if it were phased in over the next two years. If training places are raised over a longer period, or are not accompanied by other measures, a larger increase will be needed.

Other measures are also needed to mitigate short-term supply risks, and to bolster medium-term supply. As it takes a minimum of three years to train a GP, a substantial boost in training numbers from 2014-15 onwards will not significantly mitigate any supply shortfall that may exist currently or could emerge in the next few years. Hence the CfWI recommends that a range of other measures to improve workforce supply accompany the boost in GP training numbers, including:

- making general practice a more appealing career choice for medical students and foundation doctors
- improving short-term supply through retainer and return-to-practice schemes
- making it easier for trainees or established practitioners in other specialties to switch to general practice
- increasing the supply of the wider primary care and community clinical staff
- measures to scale up GP training capacity and increase the number of academic GPs
- reductions in non-clinical time spent by GPs on paperwork, reporting and administration.

More details on a number of these measures are given below. The CfWI understands a number of these measures will be addressed in the forthcoming GP Task Force report, and others are being considered by HEE. The CfWI supports prompt action to implement these measures.

The CfWI recommends to HEE that where practicable, additional GP training posts are located where patients are currently underserved or where above-average retirement patterns are predicted. It is important that the proposed increase in GP workforce supply goes where it is most needed. Given the tendency for most GP trainees to remain in the region in which they train, the CfWI proposes that a substantial share of the increase in training posts go towards improving support for areas with shortages of GPs to help achieve a more equitable access to GP services over time. HEE's LETBs should be aware of undersupplied localities and seek to locate GPs in training where they are most likely to address patient demand.

Commissioners also have a role in promoting more integrated and collaborative primary care service delivery. It is important to improve existing models of primary care through greater sharing and collaboration with other providers and professionals, general practice services delivered at greater scale and, where appropriate, changes to the primary care skill mix. Over the medium term, the fragmentation of primary care providers and care pathways are best tackled by developing new models of care which provide more integrated out-of-hospital care based around the patient.

Measures to improve existing models of primary care and possible adoption of new models of care are largely a matter for the commissioners, NHS England and CCGs. Given contractual and commissioning lead times, they are likely to have greater impact on services over the medium term.

Greater promotion of general practice as an attractive career: The CfWI notes the need to improve perceptions of the attractiveness of general practice as a career choice. The specialty could be further promoted among foundation doctors and undergraduate medical students (and possibly earlier). Increasing the numbers of GPs working in medical schools and the quality of medical student clinical experience in general and community practice might also help promote general practice as a career option.

Improving short-term supply through GP retainer and return-to-practice schemes: The CfWI sees considerable merit in improving retention of the existing workforce, for example, through retainer schemes (particularly in areas where GP numbers are under the most pressure) and support for returners through return-to-practice schemes. We understand that the GP Task Force (forthcoming) is reviewing these options.

An increase in the supply of other primary care clinical staff, including emerging clinical professions: GPs are increasingly reliant on other primary care professions to help meet growing patient demand. The practice

nurse, healthcare assistant, physician associate and advanced nurse practitioner workforces have the potential to significantly expand in size provided current obstacles are tackled. These obstacles include a lack of consistent curriculum and training standards, appropriate formal regulation, and a career structure that allows progression. The CfWI recommends that HEE works with professional and regulatory bodies to address these obstacles.

The CfWI also recommends seeking to increase the supply of practice nurses by raising the proportion of general practice places in undergraduate nursing, and that consideration be given to increasing the commissions for physician associate training.

The CfWI proposes that the GP workforce is monitored annually and reviewed every three to five years. Given the rapidly changing nature of healthcare and the inherent uncertainties about future demand, the CfWI recommends periodic reviews of GP workforce demand and supply every three to five years, supported by a stronger evidence base and annual monitoring report. The CfWI also suggests that the next strategic workforce review has a wider remit, looking at the whole general practice clinical team.

A continued drive to improve the evidence base, particularly on GP activity and workload: The CfWI encourages the HSCIC to work with its commissioners to produce an annual statistical publication on GP activity and consultation rates, drawing on the General Practice Extraction Service (GPES). It would be useful for this to be supplemented by a new GP Workload Survey and collection of workforce data on GP locums, as well as better data on practice nurses, direct patient carers and the wider primary care workforce by the time of the next workforce review.

The CfWI proposes that the direct cost of additional GP training be met through a reallocation of training posts from other medical postgraduate training. Given NHS financial constraints, a significant increase in GP trainees without a commensurate reduction in other non-GP medical training posts is unlikely to be sustainable, particularly in light of the recent decision to reduce undergraduate medical student intake. However, the CfWI also recognises there are significant indirect costs of increasing the GP workforce (such as additional practice staff and premises) which commissioners will need to consider. These are outside the remit of this review.

Measures to scale up GP training capacity and increase the number of academic GPs: To maintain the quality of training, any increase in GP training posts is best accompanied by an increase (or reallocation) in funding for training capacity. The CfWI also recommends that consideration be given to how more students, doctors in training, and GPs can be attracted into academic general practice.

Adequate steps taken to mitigate the short-term impact of extended GP training: While the CfWI recognises the case for extending GP training to four years, it is also concerned about the potential short-term impact on GP workforce supply. The CfWI recommends that if a decision is taken to extend GP training, adequate steps are taken to mitigate potential adverse effects, as outlined in Section 12 of this report.

The development of more flexible medical career pathways: Postgraduate medical training pathways are specialised and can be overly rigid. As the Shape of Training Review report argues, there is a good case for more flexible and open-ended medical career pathways, including making it easier for trainees and established practitioners in other specialties to switch to general practice.

Closer alignment of out-of-hours care: In order to develop a 24/7 primary care service, a closer alignment of in- and out-of-hours care is required. This might include continuing to allow local GPs to provide out-of-hours (OOH) care if they wish, and providing support to clinicians who work in-hours to also work out-of-hours.

Changes to the GP contract from April 2014 will give GPs more responsibility for the oversight of OOH provision.

Finally, the CfWI would like to thank the many GPs, other health professionals, professional bodies, employers, patients and the public who made a contribution to this workforce review, and welcome all responses to this report.

The GP project team can be contacted at: medical@cfwi.org.uk

2. Introduction

2.1 Why this review?

This in-depth workforce review was driven by the need to ensure that there are sustainable, high-quality general practice services in a complex and evolving healthcare environment.

General practitioners (GPs) play a pivotal role in delivering quality patient services and acting as gatekeepers to the rest of the healthcare system. Even though they are a small part of the NHS workforce (accounting for three per cent of the entire workforce), GPs see more patients each day than any other part of the NHS. Accessible and well-resourced general practices are essential if the NHS is to deliver good patient outcomes within a specified budget.

Demand for GP services has risen strongly over the last few decades, driven by a range of factors:

- higher population growth and birth rates
- an ageing population, particularly growth in the vulnerable older population
- increased prevalence of chronic conditions (e.g. diabetes, obesity, dementia) and multi-morbidity
- changes in diagnostics and treatment that allow more people to be managed in the community rather than hospital
- a growing number of very ill and/or disabled people in the community
- better-informed patients with higher expectations
- increasing non-clinical duties (e.g. GP representation on clinical commissioning groups)
- policy initiatives for better-quality care, delivered closer to home.

Growth in the GP workforce has not kept pace with rising patient demand in recent years – there are significant signs that the specialty is under considerable and growing pressure (see Section 9.3).

CfWI (2011a) previously recommended a significant increase in GP specialty training numbers, but recent recruitment rounds have seen only modest growth in vacancies and accepted offers. This is an opportune time to review the state of general practice and assess how best to enable sustainable improvements in planning for the GP workforce of the future.

2.2 About this project

The CfWI has been commissioned by the Department of Health (DH) and Health Education England (HEE) to undertake an in-depth review of the GP workforce in England.

This is a medium-term strategic review looking ahead to 2030. The main areas of investigation are:

- reviewing current workforce demand and supply issues in general practice
- modelling future demand and supply under a range of plausible scenarios, and making recommendations to help ensure the future sustainability of the GP workforce
- understanding the likely impact of shifts in care in the medium and long term
- developing and refining the CfWI GP system dynamics model
- making recommendations, if appropriate, on GP service delivery models and the affordability of different options.

The CfWI has worked closely with its commissioners as well as the General Practice Task Force, the Royal College of General Practitioners (RCGP), NHS England and other key stakeholders.

2.3 The General Practice Task Force

The GP Task Force, chaired by Dr Simon Plint, is working to help improve GP retention and boost GP training numbers and capacity. We understand that the forthcoming GP Task Force report will make recommendations on workforce, education and training, cost and timescale for delivering the national training numbers needed to boost GP specialty training and help improve workforce retention in the next few years.

There are shared areas of interest between the two projects, including reviewing how workforce data collection and analysis could be improved. The terms of reference and the membership of the GP Task Force are detailed in Annex G.

2.4 Preliminary findings and roadshows

This final report follows the publication of the *GP in-depth review: Preliminary findings* report (CfWI 2013a) in March 2013. The CfWI held four national GP review roadshow events in London (14 March), Leicester (19 March), Leeds (20 March) and Bristol (8 April 2013) to discuss its preliminary findings, emerging recommendations and modelling.

The CfWI project team has listened to the views of more than 150 GPs and other health professionals. The people the team spoke to (listed at Annex A) confirmed that the *Preliminary findings* were on the right track. They agreed on the need to boost the GP workforce through a substantial increase in training posts, and that it wasn't just about national workforce numbers but where those additional doctors are best located.

Across the four roadshows there was general agreement that GPs will be spending more time dealing with chronic conditions (e.g. diabetes, obesity, and dementia) and multi-morbidity, and less time on minor injuries and illnesses. GPs also see themselves playing a growing role in the coordination and 'navigation' of patients' treatment through the increasingly complicated healthcare system.

In addition to the well-known demographic pressures of a growing and ageing population, participants in the CfWI roadshows thought that better-informed patients with higher expectations would continue to raise demand for GP services. So too would an increase in non-clinical duties, and policy initiatives for better-quality care, delivered closer to home.

A number of participants urged the CfWI to consider the contribution that could be made by other primary care professionals such as practice nurses, physician associates, advanced nurse practitioners and pharmacists.

Roadshow participants also raised a number of issues and concerns. Some were not confident that the increase in GP specialty training the CfWI outlined in the *Preliminary findings* would be met, citing obstacles and delays to earlier plans. Several argued that even this boost in numbers may be insufficient to meet future patient demand, given how rapidly it has been growing.

There was also understandable concern about the impact of continuing tight health budgets on primary care and the wider NHS. In addition:

- primary care commissioning was described as too target and activity driven, rather than being outcome focused
- regional variation in access to GP services and areas that have difficulty in recruiting and retaining GPs were a concern (how do we get GPs there, and ensure they stay there?)
- the possible impact of early retirement, due to changes to the GP contract and pensions reform, was also raised at several roadshow events.

2.5 The CfWI workforce planning framework

The CfWI has a unique workforce planning approach for in-depth workforce reviews, which recognises the complexity of factors influencing demand and supply, and the intrinsic uncertainty of the future. The four stages of the CfWI's approach for this workforce review are outlined in Figure 1 earlier:

- horizon scanning
- scenario generation
- workforce modelling
- policy analysis.

Extensive involvement of stakeholders from the GP workforce, other health professionals, employers and patients helps ensure the CfWI's findings are robust. The CfWI also uses professional advisors and members of its Governance Board to provide independent input and challenge to the work of the project team.

For more details of the CfWI's workforce planning framework, please refer to Section 7 of this report and to the technical reports (CfWI 2012a, 2012b). The CfWI's modelling assumptions are set out in Annexes D, E, and F.

3. Context

3.1 Policy drivers

The CfWI has identified nine key policy drivers of relevance to the GP workforce now and in the future. These have helped to inform the CfWI project team's thinking as they went about conducting this workforce review.

Shift in care and named GP

The Government has recently announced its intention "to better serve those living with complex health and care needs" and improve continuity of care (DH and NHS England, 2014). By the end of June 2014, all people aged 75 and over will have a named GP with overall responsibility for, and oversight of, their care. To support the shift in how care will be provided the Government is "planning to make available around 10,000 primary and community health and care professionals by 2020".

The move towards GP-led commissioning

Clinical commissioning groups (CCGs) have responsibility for commissioning and budgeting most healthcare services for their local populations, supported by NHS England. GP involvement in CCGs increases their non-clinical duties but also raises their influence in commissioning decision-making.

GP revalidation

The General Medical Council (GMC) introduced licences to practise in November 2009, and all GPs are registered. All doctors will have to go through a process of revalidation, whereby doctors must provide evidence that they are fit to practise. This process began in late 2012, and all doctors who wish to retain their licence to practise will have to have been revalidated by March 2016.

Extended practice hours

General practices are being encouraged to offer evening opening hours and seven-day-a-week access to patients, and to make greater use of Skype, email and phone consultations for those who would find it easier (AoMRC 2012; DH and PMO, 2013; DH and NHS England ,2014).

Shift in the size and scope of GP services

The shape and scope of GP services is a key driver. Larger practices may be able to offer a broader range of services and enhance their skill mix; with practice nurses, pharmacists and other professionals perhaps taking a larger role. Commissioners such as NHS England are encouraging a move towards broader primary care services delivered at greater scale.

Greater focus on patient safety

The Francis report (2013) states that patients should be the first priority and recommends that they receive effective care from a caring, compassionate and committed staff working in a culture of openness and transparency (including performance and outcomes).

The report recommends that GPs take a monitoring role when their patients receive acute hospital and other specialist services. The Francis report saw them as being an independent, professionally qualified check on the quality of service and outcomes. They have a responsibility to all patients to keep themselves informed of the standard of service available at various providers in order to make informed patient choice a reality. The report states:

> *A GP's duty to a patient does not end on referral to hospital, but is a continuing relationship. They will need to take this continuing partnership with their patients seriously if they are to be successful commissioners* (Francis, 2013, recommendation 123).

Likewise the Berwick report on patient safety (DH, 2013b) recommends that 'patients and their carers should be helped to establish effective relationships with their clinicians at every stage of their care, from GP surgery to hospital ward', and 'should be involved as much as possible in their care planning'.

Proposals to extend GP training

GP training is currently shorter than all other UK medical or surgical specialties, and less than half the duration of some specialty programmes. In 2012, Medical Education England (MEE) accepted the educational case to extend GP training from three to four years. The Department of Health has stated that 'this extension is supported in principle, subject to confirmation of the economic case and affordability' (DH, 2013a).

Integrated working between primary and secondary healthcare and with social care

There has been a long-standing and widely expressed desire to see closer working between integrated primary and secondary care, and for more integrated health and social care. The potential benefits of a more coherent interface include better health outcomes, more cost-effective care and improved patient experience. A possible route to this includes creating GP federations to enable more sharing of expertise and a broader range of services. Other ideas include sharing patient records, increasing the scope of general practice and improving financial incentives for integration. Barriers include risk aversion, cultural differences between professions and between primary and secondary care, tariff concerns and governance issues.

Changes to GP contracts introduced in April 2013 will have an impact on the way GPs work, their workload and the services they deliver. Some of the revisions included changes to the Quality and Outcomes Framework (QOF), such as increasing the upper thresholds for QOF indicators and phasing out organisational indicators. GPs are also encouraged to take on new work to retain funding, with new directed enhanced services, including testing for dementia in at-risk groups.

Some GPs attending CfWI roadshows expressed concern that the 2013-14 contract could make becoming a partner less attractive due to greater financial risk, and might increase the pressure on general practices' business viability. According to the BMA, general practices could face significant increases in their workload as a result of these contract changes.

The GP contract has been further amended from April 2014. Key changes include:

- a named GP for patients aged 75 or older
- GPs to get more responsibility for out of hours (oversight not provision)
- reduced emergency admissions to replace quality and productivity indicator in QOF
- £290 million of QOF pay to be diverted to core GP contract
- a mandatory friends and family test mandatory.

Public health

Public Health England (PHE) was established to protect and improve health and well-being in England, and to reduce health inequalities. It took up its full powers in April 2013. PHE will be collaborating with partners to encourage integrated care as the preferred local model, particularly for people who live with long-term conditions (see Section 3.6 for more details).

A recent report on population health by the Nuffield Trust (2013), commissioned by the National Association of Primary Care (NAPC), explores the role general practices can play in helping to meet the challenge of society's health needs with increasing levels of chronic ill health and constrained health budgets. It examines the arguments for encouraging and enabling general practices to take on a much more proactive role in improving the health and well-being of their local populations. The report highlights the need for good-quality data and risk-stratification tools to support this task:

> *Routine data on smoking, body mass index and other lifestyle indicators for patients who do not normally come into contact with their GPs represent the biggest challenge. Policymakers will need to enable investment in data collection, alongside innovative approaches to payment systems and contracts, which will enable practices to work with others to be more proactive.*

3.2 The HEE mandate

In May 2013 the Department of Health published its mandate for Health Education England to March 2015 (DH, 2013a). One of the short-term deliverables was:

> *To ensure progress should be made in each year of the mandate towards ensuring that 50% of medical students become GPs.*

The mandate's longer-term objective for general practice is more specific:

> *Ensuring that 50% of specialty trainees choose to enter GP specialty training.*

Although the Government's desire for a significant increase in GP training numbers is clear, the magnitude and timing of the increase is open to interpretation.

For the purposes of the supply modelling in this report, the CfWI starts with a standard workforce supply baseline which shows what would happen if current trends in training, workforce attrition, retirement and participation rates were carried forward over the projection period. In Section 11 the CfWI then models what kind of increase in training posts would be required to bring demand and supply in balance over the medium term.

3.3 Previous recommendations on GP training numbers

This report is not the first review to recommend an increase in GP training posts. The NHS Plan (DH, 2000) promised 2,000 more GPs. The NHS Next Stage review (DH, 2008) recommended:

> *In the light of the increasing demand for primary and community care services, SHAs will be expected to expand GP training programmes in 2009 based on existing resource allocation. Further expansion of training programmes in England by up to 800 places is also being planned so that in future at least half of doctors going into specialty training will be training as GPs. The expansion of general practice underlines our commitment to supporting and improving primary care.*

If implemented, this would have increased GP training posts in England to around 3,300 per annum.

The CfWI's previous report on the GP workforce (CfWI, 2011a) recommended a phased increase in GP training programmes that would lead to more trainees in GP training and an increased workforce supply:

> *The CfWI recommends an increase of 450 entry-level [GP] training posts phased over the next four years. This should be achieved by a significant reduction in other areas of specialty training, in order to achieve the shift required. Further work is needed to improve the fill rate of existing and future GP training posts.*

This recommendation would have seen training posts reach a stable number of 3,250 by 2014. The 2011 CfWI report also recommended 'a further review of our recommendations in 2013'. The date for reaching the 3,250 recruitment target was later extended to 2015. This target was the basis for the CfWI's workforce supply modelling in the *Preliminary findings* (CfWI, 2013a), but as noted above this has been superseded by the new HEE mandate (DH, 2013a).

3.4 Patient experience and access

The majority of patients are very positive about their experiences with GPs. The latest *GP Patient Survey* (Ipsos MORI, 2013) found the vast majority of patients (93 per cent) had trust and confidence in the GP they saw. Similarly, most patients (87 per cent) said they had a 'good' overall experience of their general practice, with just under half (45 per cent) describing their experience as 'very good'.

However, there is significant variation between GP services and across different geographical areas. Practices in London and those located in more deprived areas are much more likely to underperform on both clinical outcome measures and patient experience (The King's Fund, 2012).

Three quarters of patients (76 per cent) rated their overall experience of making an appointment as good, with 35 per cent saying it was 'very good'. Four in five (80 per cent) said they were satisfied with the opening hours of their GP surgery. Although most of the time patients report good access to their GP, there are variations in access between practices and across geographical areas (Goodwin, et al., 2011).

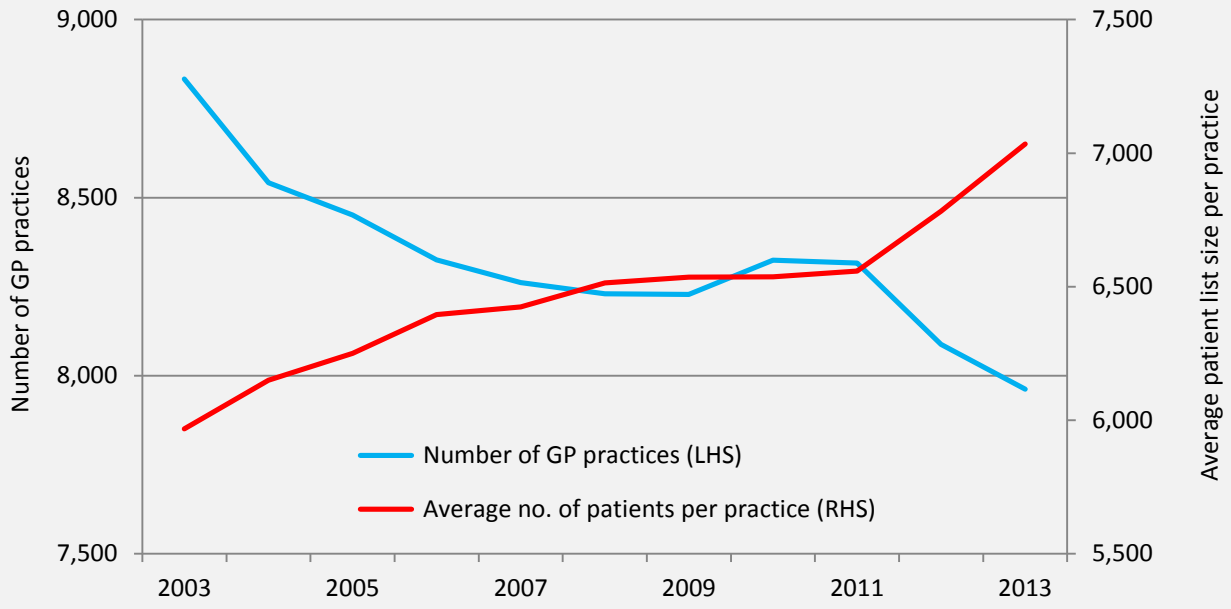
In a recent international survey just over half of UK GPs (55 per cent) said that almost all patients (more than 80 per cent) could get a same- or next-day appointment when one is requested. This was broadly in line with the average of the 11 OECD countries surveyed (Commonwealth Fund, 2012).

3.5 General practices and contracts

General practices are not homogenous. They vary considerably: by the size of their practice and patient list, by the type of contract, and by local health economy.

As with businesses in other sectors, drives for economies of scale have led to the decline of small, and in particular, singlehanded GP practices, and the emergence of larger ones. As a result, the total number of GP practices has been falling and their average patient list size growing (Figure 4).

Figure 4: Trends in the number of general practices and average patient list, England



Source: HSCIC (2014), CfWI analysis

Single-handed practices have been in steady decline for many years. They now account for only 11.2 per cent of practices and care for less than 3 per cent of patients (HSCIC, 2014). By contrast, very large practices (those with 10 or more partners) have doubled in number since 2005, and we estimate they now care for around one in seven patients. The CfWI expects this shift towards larger general practices to continue. On present trends, very large practices could cover more than half of the patient list for England by 2030.

A similar pattern has been observed internationally. For example, in Australia, current funding policy supports the establishments of 'GP Superclinics' in the belief that economies of scale can be achieved (Moretti, et al., 2010; Smith, et al. 2012).

General practices are effectively private businesses contracted to the NHS. There are four contract types under which they deliver services:

1. Before the 2004 revision, most GP practices were contracted under the General Medical Services (GMS) contract, through which GPs received payment for each piece of work done according to the number of registered patients.

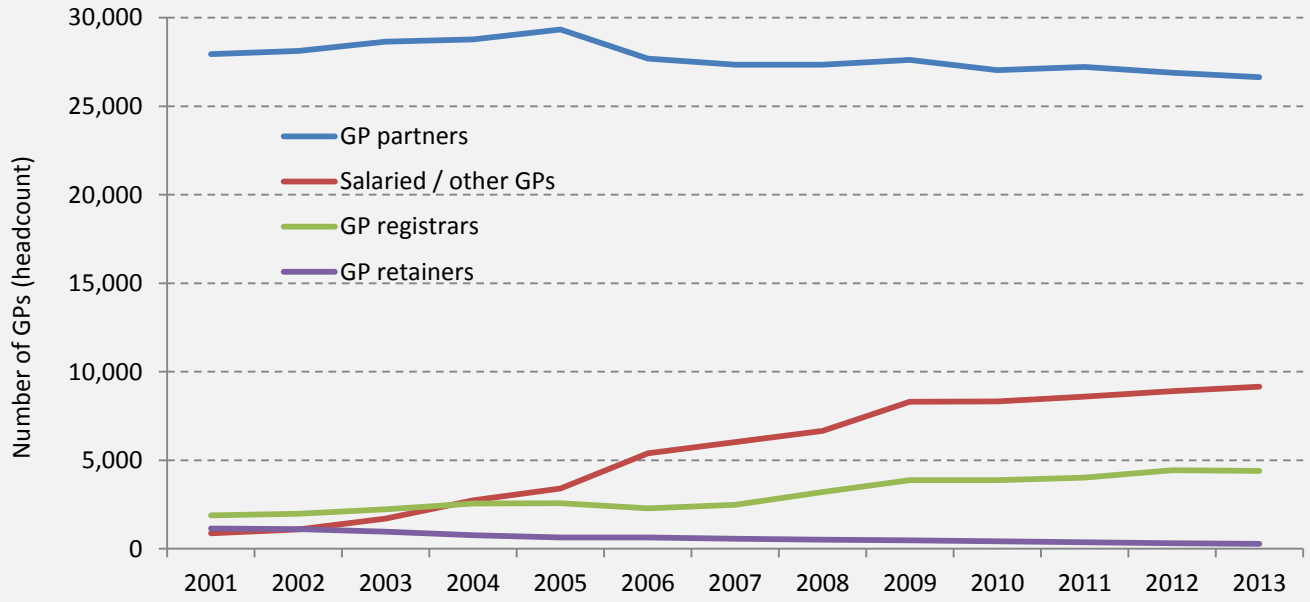
2. The new 2004 contract introduced Quality Outcomes Framework (QOF) measures to help improve standards, as well as providing scope for extending services (The King's Fund, 2011). The Personal Medical Services (PMS) contract was introduced in 1998, and is a locally negotiated contract enabling GPs to innovate in response to local needs. The differences between the GMS and PMS contracts decreased after the 2004 GMS revision (Simon, 2008), as both contract holders have the opportunity to opt out of out-of-hours services, and most PMS contractors take part in QOF.

3. The third main type of contract is the Alternative Provider Medical Services (APMS) contract, which allows commercial or voluntary organisations to provide primary care services. GMS and PMS contractors can also convert to APMS. APMS contracts allowed primary care trusts (PCTs) freedom to provide services

themselves, often to address capacity issues (Gregory 2009). The awarding of APMS has thus far remained limited (The King's Fund, 2011).

4. The Primary Care Trust Medical Services (PCTMS) contract allowed primary care trusts (PCTs) to provide medical services directly. This contract was phased out in April 2013 when PCTs ceased to exist.

Figure 5: GP employment status, England, headcount



Source: HSCIC (2014), CfWI analysis

There has been significant change in the employment status of GPs, as Figure 5 shows. From a very small share of the GP workforce a decade ago, salaried GPs now account for nearly one quarter of all GPs, excluding GP locums, registrars and retainers[3] (HSCIC 2014). The CfWI's Delphi panel considered this proportion could increase to one third of the workforce by 2030.

According to the King's Fund (2011), salaried GPs often have short-term contracts and do not have the financial commitment of GP partners, giving them more flexibility in their careers but at the same time less job security. Overseas-qualified GPs, particularly from the European Economic Area (EEA), are more likely to have salaried status (Ding et al. 2008). The importance and role of salaried GPs in alternative models of service delivery and the future employment status of GPs is discussed later in the report.

[3] The GP Retainer Scheme is designed to ensure that doctors who can only undertake a small amount of clinical work may keep in touch with general practice, retain their skills, and progress their careers with a view to returning to NHS general practice in the future (West Midlands Deanery, 2013).

3.6 Public health and GPs

GPs have a key role in promoting public health, due to their strong community links. GPs can also help with planning for public health improvement through data collection and targeted interventions.

GP representatives are expected to sit on health and wellbeing boards, to inform local public health initiatives. Board members will also include an elected representative, public authority representatives for adult social services, children's services and public health, a local Healthwatch representative and CCG representatives (DH 2012a). GPs will play an integral role on these boards, and the presence of local authorities will enable an integrated local public health strategy.

In addition, Public Health England (PHE) was established to protect and improve health and wellbeing in England, and to reduce inequalities. It took up its full powers in April 2013. PHE is involved in a national collaboration with NHS England, the Local Government Association (LGA), the Department of Health and Monitor, the health services regulator, to encourage integrated care as the preferred local model, particularly for people who live with long-term conditions.

3.7 Academic GPs and GP training

Academic general practice

An alternative to the three-year GP training programme is a National Institute for Health Research (NIHR) academic clinical fellowship (ACF).

There were 25 fellowships available for GPs in England in 2013 (GPNRO, 2013a). These posts give those who have completed the foundation programme training, and have academic potential, an opportunity to combine standard GP training with additional academic training. There are also further programmes for fully qualified GPs to undertake academic training. In-practice fellowships help provide 50 per cent protected research time. The NIHR clinician scientist route allows those capable of leading research in their discipline (with a PhD) to undertake supported postdoctoral training (NIHR, 2013).

Academic GPs provide leadership in universities and in some instances contribute to education and research developments in postgraduate deaneries.

GPs working as undergraduate clinical tutors, linked to universities, also make significant contributions to the quality and safety of patient care at local, regional and national levels, and provide a link between education and clinical practice. Building on their previous clinical experience, expertise and in some instances research contributions, they are able to contribute to the development and implementation of Government policies and plans in public health.

Over recent years, academic general practice has expanded. According to the latest survey of staffing levels of medical clinical academics in UK medical schools (Medical Schools Council, 2013), the number of academics in general practice has increased by 7.5 per cent (184 to 197) since 2010 and by 29.1 per cent (153 to 197) since 2000. Physicians/medicine increased by 31 per cent since 2000. In comparison, there was a reduction in clinical academic capacity in pathology (-60 per cent since 2000), anaesthetics (-43.4 per cent since 2000), psychiatry (-29. per cent since 2000) and obstetrics and gynaecology (-29.5 per cent since 2000).

When considering the rate of vacancies as a proportion of total available posts, general practice had a 3.8 per cent vacancy rate for those posts where the grade was known to be professor, senior lecturer or lecturer, compared with an average of 5.3 per cent for all 17 specialties surveyed.

In 2012, there were 3,167 FTE clinical academics (3,467 headcount) employed by the 34 UK universities with medical schools, a steady level since 2010. The FTE number of clinical academics remains 10.8 per cent lower than in 2000. Academic GPs make up only 6.2 per cent of the total medical academic workforce (Medical Schools Council, 2013). GPs make up 27.5 per cent of the total medical workforce, so there is a clear **under-representation of general practice in academia** relative to the size of the specialty.

GP training capacity

GP training can only be conducted in approved GP training practices and must be supervised by an approved GP trainer. There are nationally agreed standards for approving GP training practices and by some accounts it is becoming increasingly difficult to encourage new practices to meet these standards and apply for training status; not least because meeting the required standards usually has a financial cost for the practice concerned, over and above the time that partners need to dedicate to the exercise.

Similarly, the requirements to become an approved GP trainer are quite onerous and there may not only be problems in retaining existing GP trainer numbers (due to a predicted retirement bulge), but also in attracting new trainers when there are so many other competing responsibilities in general practice.

In order to maintain the quantity and quality of training, the increase in GP trainee numbers will need to be accompanied by **an increase (or reallocation) in funding for training capacity**.

Consideration also needs to be given to how more students, doctors in training and fully qualified GPs can be attracted into both formal academic roles in general practice and as GP trainers. Consequently, more opportunities for developing clinical academic and educational/training careers are needed, with:

- more opportunities to become a trainer provided during GP training
- more opportunities for GPs on an academic career track to undertake PhDs before and after completing their training
- more opportunities for postdoctoral and teaching/educational fellowships for GPs
- a career structure that allows academic GPs to progress
- a restoration of the historical financial incentives to become and remain a GP training practice and trainer.

There are also other challenges involved with scaling up GP training, such as funding for training practices so that they can develop and improve their infrastructure by adding new consultation rooms and other facilities.

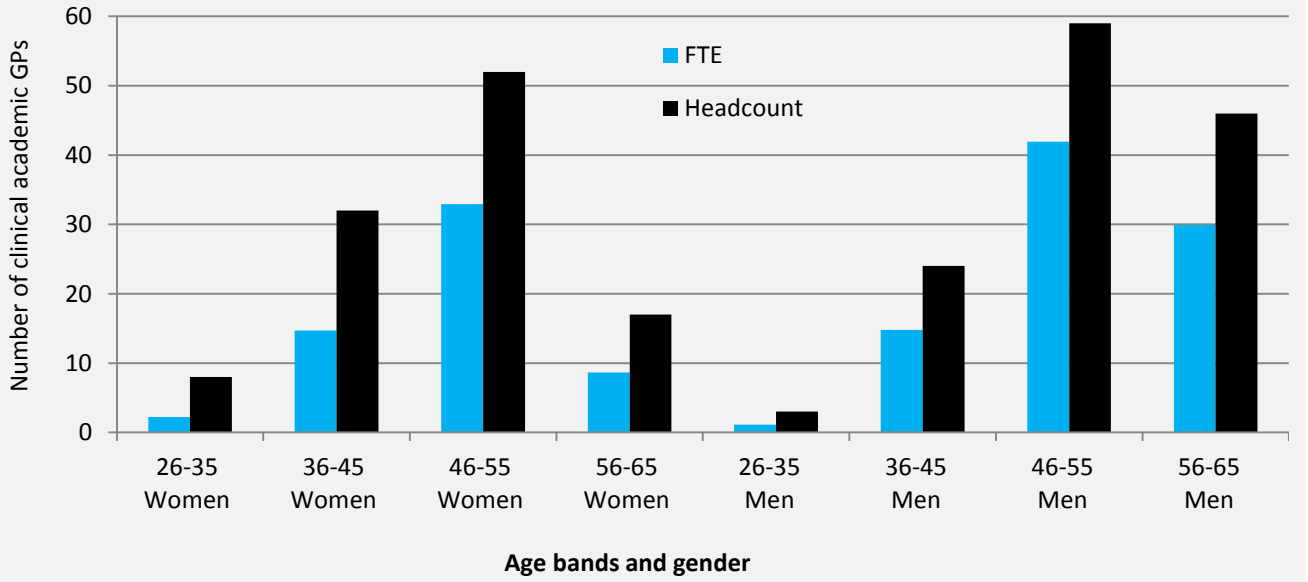
A potential further issue will be the challenge of finding additional and appropriate hospital training posts for the planned increasing numbers of GPs in training, who will need to spend a significant proportion of their time in hospital placements. The CfWI is concerned that for all trainees, there is a risk that this expansion could lead to an increase in service-focused posts in hospitals, and that the quality of training could suffer as a result.

Increasing the numbers of GPs working in medical schools is a possible way to help promote general practice as a career choice and provide the necessary increase in numbers of GPs in training.

Programmes run by the NIHR funded through DH have also created research opportunities for GPs working in medical schools to get involved in different elements of NHS research. The School for Primary Care Research at NIHR comprises the academic centres for primary care research in England. Its focus is on research to improve everyday practice in primary care. There is a total fund of £3 million per year available to support clinical trials and other well-designed studies in primary care and at the interface with secondary care.

Figure 6 shows the ages of men and women academic GPs in 2012. The majority of both men and women are aged between 46 and 55, and a higher proportion of men are aged between 56 to 65, thus approaching retirement.

Figure 6: Age of men and women clinical academic GPs in medical schools in England, 2012



Source: Medical Schools Council (2013)
Note: Academic grades included are clinical lecturers, clinical professors and senior clinical lecturers/registered doctors

3.8 Out-of-hours services

Out-of-hours (OOH) is defined as work done between 18.30 and 08.00, and all day at weekends and on public holidays. It is generally considered to be only for urgent and unscheduled patient contacts. There are a number of organisations involved in the delivery of OOH and unscheduled care services, including GP cooperatives, commercial services, NHS Direct, urgent care walk-in-centres, GPs working in accident and emergency departments or minor injuries units, and some practices (and practitioners) who continue to provide care for their practice patients OOH.

Since the introduction of the new General Medical Services (GMS) contract in 2004, practices have been able to choose whether to provide 24-hour care for their patients. The majority of GPs opted out from providing cover for OOH or transferred responsibility for OOH services to their then primary care trust (PCT), where out-of-hours was provided by a mix of GPs, nurses and other healthcare professionals. Since April 2013, these services are managed by NHS England local area teams (LATs).

In order to develop a 24/7 primary care service where patients can access care when they need it, at the time they need it, it is necessary to consider the current separation of the care provided in-hours by general practices and that provided out-of-hours. There could be a closer alignment of in- and out-of-hours care, including continuing to allow local GPs to provide out-of-hours care if they wish, and providing support to clinicians who work in-hours to also work out-of-hours.

Enhanced GP training is also an opportunity, where the OOH provider is able to employ a trainee who is about to enter the trained GP workforce. The OOH provider does not currently pick up any of the GP trainee salary costs, but is able to make use of the trainee's contribution to service. However, OOH providers must do more to showcase their service and give trainees a career-changing experience of OOH during their current placements in ST1-3 if they are going to develop the opportunity to highlight OOH care as part of a career portfolio for trainees once they have completed training.

In addition to GP trainers helping trainees to contextualise their learning in OOH against the GP curriculum, if more GPs with an interest in education also had continuing exposure to OOH, and the opportunity to maintain expertise by working in a modern OOH service, this would allow them to highlight the importance of such services and the associated career opportunities to their trainees. In such circumstances, those trainees may see urgent care and OOH as an important part of a generalist's role.

To provide an efficient and effective OOH service there is a need for partnership and collaboration between all agencies at the local level. Specialists and generalists such as GPs, nurses and pharmacists could work together to construct joint rotas to cover 24-hour service provision. The services could follow care pathways and patient journeys, delivered in multi-professional settings, which would include GPs, nurses, paramedics and accident-and-emergency (A&E) staff and help to reduce the burden of unscheduled admissions to secondary care. In addition, to ensure quality standards and continuity of care in OOH services, GPs may be best placed to lead the commissioning of delivery of this care, and reassume responsibility for ensuring adequate funding.

4. The wider primary care workforce

4.1 The general practice team

GPs are part of a wider general practice team. Multidisciplinary teams working closely together can lead to:

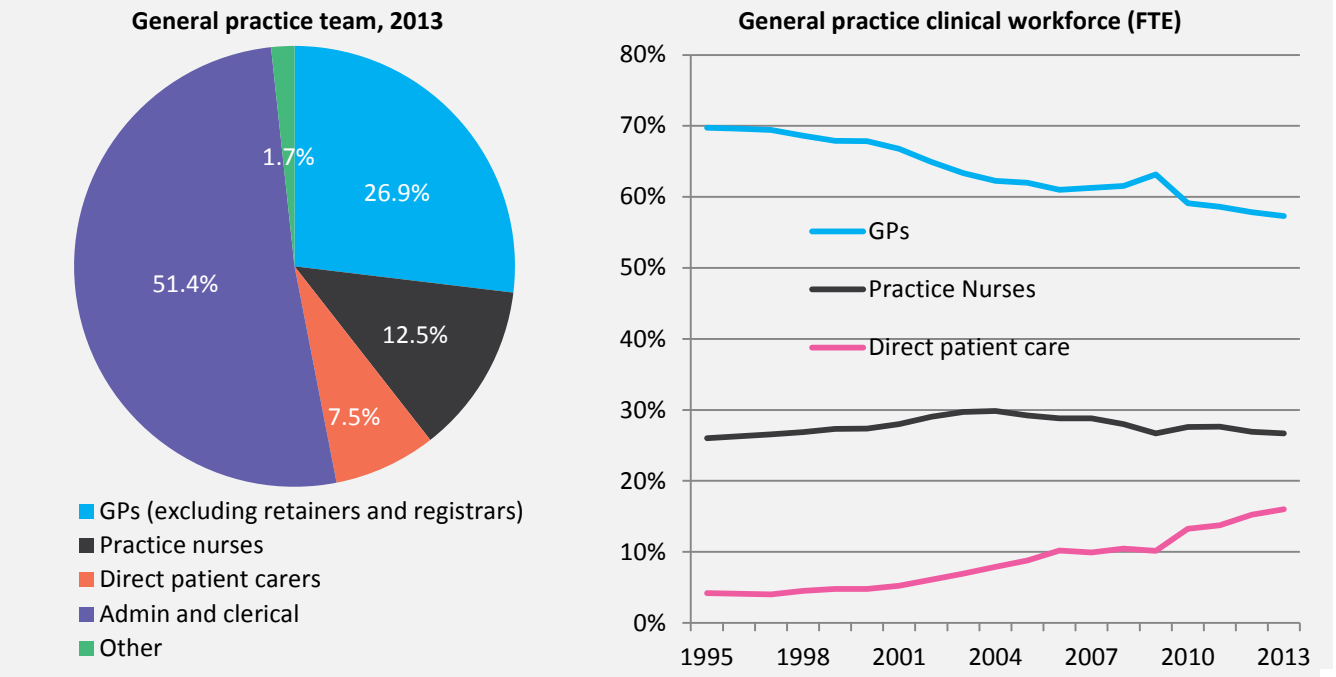
- improved effectiveness of task substitution
- better communication with patients
- improved continuity of care for patients
- increased opportunities to spend more time with patients with chronic diseases.

Greater capacity in the primary care and community health and care workforce would give providers and commissioners the opportunity to adopt a range of care models and skill mixes to alleviate pressure on primary care services. As a recent Government report (DH and NHS England, 2014) argues, "there is also a pressing need to improve capacity in certain sectors including general practice nursing and district nursing". The report says the Department of Health and NHS England will take action to:

> ***Encourage more effective use of skill mix in general practice and encourage practices to work with the wider community workforce and with communities themselves to allow best use of community assets.***

Key primary care professional groups are explored below, starting with the wider general practice team.

Figure 7: The general practice workforce, percentage of FTE, England



Source: HSCIC (2014) and earlier GP Censuses
Note: A change in general practice staff counts from 2010 will affect comparisons with prior estimates

Figure 7 provides data on the wider general practice workforce. GPs themselves accounted for around 27 per cent of practice staff in 2013, with administrative and clerical staff making up the largest share of the practice team (51.4 per cent), and 12.5 per cent of the workforce being practice nurses. Direct patient carers (which include healthcare assistants) accounted for 7.5 per cent in 2013, and their numbers have steadily grown in recent years. As a proportion of the general practice *clinical* workforce, GPs have fallen from around 70 per cent to 57 per cent since 1995, while practice nurses have remained at or a little below 30 per cent (FTE basis). Direct patient carers have quadrupled, from 4 to 16 per cent since 1995. It is reasonable to expect this trend of fewer GPs and increasing direct patient carers will continue over much of the projection period, although we may also see other workforces contribute to primary care.

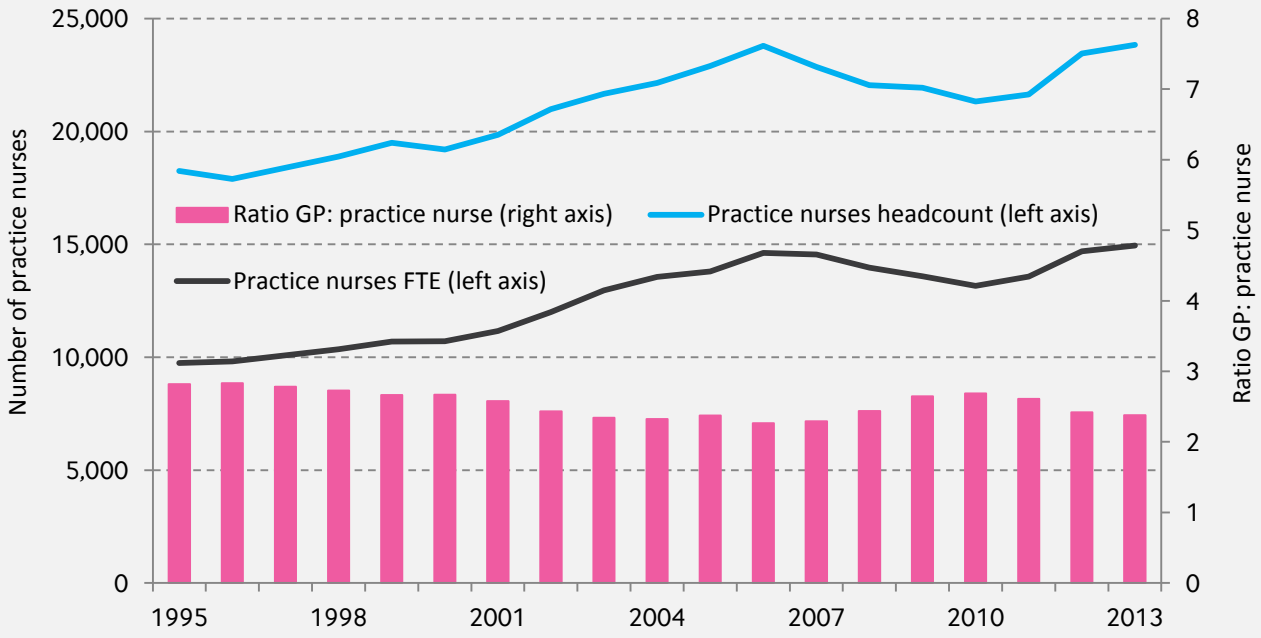
4.2 Practice nurses

Practice nurses are required to be qualified and experienced registered nurses. They are mostly employed by general practices, although some are employed by other NHS and independent providers such as walk-in centres. Training is commissioned in different ways, primarily by their employer.

On the workforce supply side, there is some evidence of undersupply due to **problems with practice nurse training pathways and other nursing careers being considered more attractive** (CfWI, 2012c).

Practice nurses have a vital role to play in general practices, accounting for around one quarter of the clinical team and an increasing proportion of patient consultations (HSCIC, 2009 and 2013a).

Figure 8: Practice nurse headcount, FTE and GP: practice nurse ratio



Source: HSCIC (2006a, 2006b, 2012 and 2014)
Note: A change in general practice staff counts from 2010 will affect comparisons with prior estimates

Most of the increase in general practice activity between 1995-96 and 2008-09 was met by an increase in practice nurse numbers and a jump in their consultation rates (HSCIC, 2009). As Figure 8 shows, after peaking in 2006, the number of practice nurses employed by GP practices subsequently fell by around 1,400 (FTE

basis), although this was more than offset by an increase in direct patient carers (Figure 9). Practice nurse numbers have picked up again since 2010.

A number of factors may explain this, including GP partners attempting to reduce staff costs by replacing nurses with healthcare assistants or other support staff, or doing more work themselves.[4]
The introduction of the Quality and Outcomes Framework (QOF) has changed the nature of practice nursing, with an increased focus on the role of practice nurses in supporting people with long-term conditions. Almost four in five UK GPs (78 per cent) surveyed recently reported that their practice used nurses as case managers or navigators for patients with serious chronic conditions, a higher figure than in any of the other 10 OECD countries surveyed (Commonwealth Fund, 2012).

The CfWI's recent report on practice nurses (CfWI, 2012c) found there were significant data issues to be resolved, as GPs do not routinely collect and report centrally on their workforce. Only a small proportion of training was commissioned centrally by the former strategic health authorities (SHAs), and this was often delivered and accessed on an ad-hoc basis.

The CfWI understands that the September 2013 HSCIC workforce census is collecting more granular information on nurses, namely splitting them into:

- advanced level nurses
- extended role and specialist nurses
- practice nurses.

The HSCIC is also currently piloting a workforce Minimum Data Set (wMDS) with some GP practices to collect more information on GPs and their practice staff to support workforce planning. Subject to the outcome of the GP pilot, further information will be collected and then available on GPs and their practice staff.

These initiatives should help provide **better and more complete data on practice nurses** (and the wider general practice workforce) in time for the next GP workforce review.

[4] The CfWI cannot be sure as no activity or consultation rate data has been published by the HSCIC since 2009.

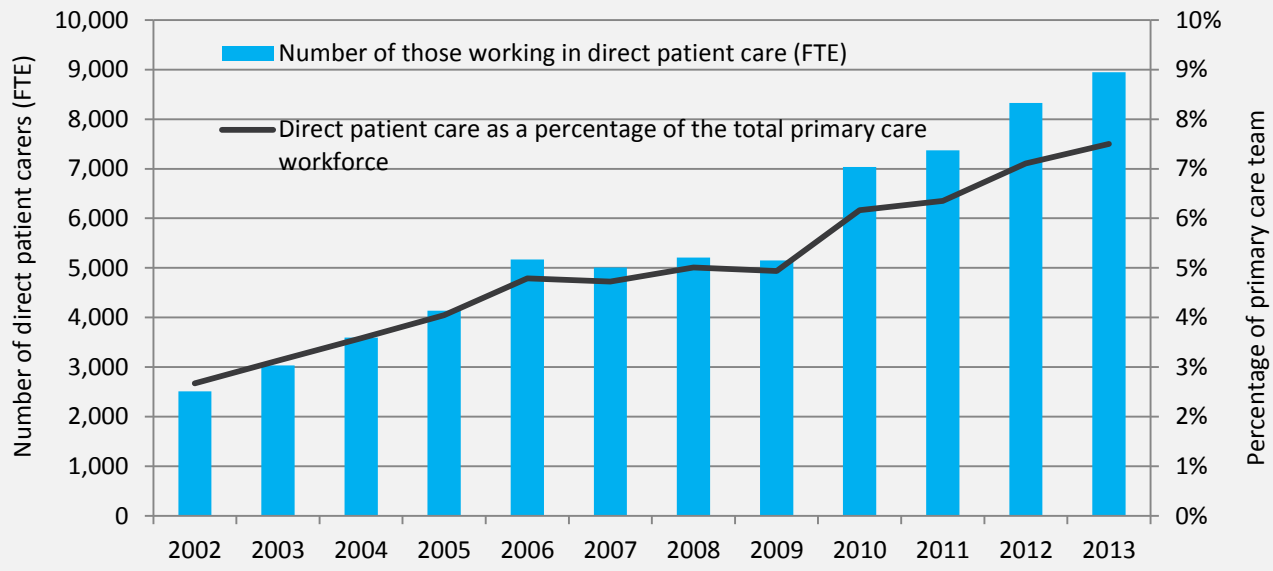
4.3 Direct patient carers

Those classed as working in 'direct patient care' constitute 7.5 per cent (FTE basis) of the general practice workforce (HSCIC 2014), and this proportion has been growing rapidly. The number of direct patient carers has more than tripled in the past decade, and more than doubled as a proportion of the practice staff (up from 3.1 per cent FTE in 2002). Yet this sector of the primary care workforce is poorly defined and underexplored.

The HSCIC uses the Caldicott review's definition of direct patient care. This defines it as a 'clinical, social or public health activity concerned with the prevention, investigation and treatment of illness and the alleviation of suffering of individuals' (HSCIC 2013c). This definition could reasonably apply to all working in a clinical setting (and beyond), which suggests that the CfWI does not currently have a tight enough definition of the work of this section of the workforce. No further breakdown is provided by the HSCIC (or elsewhere) of this sector of the workforce[5], although the CfWI understands a significant proportion are healthcare assistants.

As a substantial and rapidly growing part of the primary care workforce, **more detailed data collection** for this group would be needed before any recommendations regarding its role in skill mix or future development can be made. The HSCIC's pilot workforce Minimum Data Set (wMDS) for general practices should shed more light on the direct patient carer workforce.

Figure 9: Growth of the direct patient care workforce in general practices



Source: HSCIC (2014)
Note: A change in general practice staff counts from 2010 will affect comparisons with prior estimates

[5] Direct patient carers are defined by the HSCIC as anyone who is directly involved in delivering patient care but who is not a nurse or GP. This includes healthcare assistants (HCAs), physiotherapists, pharmacists, phlebotomists, chiropodists, dispensers, counsellors, complementary therapists, etc. Practice staff with non-clinical roles are assigned to the 'other' category.

4.4 Pharmacists

As medicines experts, pharmacists are well placed to address complexities emerging from multi-morbidity and long-term conditions. Primary care pharmacists work closely with GPs and can offer advice on good prescribing, which can lead to more effective first-time prescriptions and help address capacity issues in the NHS. Participants at a recent CfWI pharmacy in-depth review scenario generation workshop made the case for expanding the role of pharmacists. This could involve routine testing, helping to manage long-term conditions, and advising patients on the use of technology.

Technology initiatives such as e-prescribing, which replaces paper-based prescribing and supports auditing, offer potential cost savings (CfWI, 2011b). As with practice nurses, greater use of pharmacists in primary care teams offers considerable potential, but will need careful implementation.

Due to the various visions for pharmacy and a lack of coherent narrative for the profession's role in the reformed NHS, the Royal Pharmaceutical Society has set up a Commission on Future Models of Care, chaired by Dr Judith Smith, Director of Policy for the Nuffield Trust. The Commission on Future Models of Care (2013) notes that the projected increase in pharmacist numbers (CfWI, 2013b) is 'in stark contrast' to the projections for general practice and primary care nursing. The commission argues that:

> *The ready availability of a highly trained pharmacy workforce could be seen as an opportunity to take some of the pressure off general practice by integrating pharmacists more effectively into primary care teams, and redirecting some patient demand.*

The CfWI agrees that more could be done to make the most of the complementary roles of pharmacists and GPs in key areas of patient care in England, following Scotland's example. Areas where community pharmacists have the capacity to take on a broader role include the management of medicines for people taking multiple drugs, the provision of advice for minor ailments, and the delivery of public health services such as weight management, sexual health, and smoking cessation. **A broader role for pharmacists could be an important element of a more integrated primary care delivery system**.

4.5 Physician associates

Physician associates (PAs), previously known as physician assistants, are mid-level practitioners with a science-orientated first degree that has enabled them to get onto one of the training programmes available. The PA role has a history of over 40 years in the US, where there are now more than 80,000 working PAs. In Europe, the Netherlands adopted the model seven years ago and now has 700 PAs. However, the role is still relatively new to the UK, with about 200 PAs currently known to be working across approximately 30 acute trusts (Parle and Ross 2012).

The latest annual census by the American Academy of Physician Assistants (AAPA, 2010) found there were 83,466 registered PAs in clinical practice who were. This workforce is also projected to grow by 39 per cent by 2020; the Bureau of Labor Statistics (2012) predicts that physician assistants will be the second-fastest-growing health profession in the next decade (after home health aides).

The UK has been exploring the use of PAs, as have other countries. The NIHR commissioned a project in August 2010 based at the University of Southampton to investigate the contribution of physician associates to primary care in England, which is due to be published in summer 2014.

Recent pilots in England and Scotland of PAs employed in general practice or out-of-hours services reported that PAs were well accepted by patients, undertook work previously done by medical staff, needed to consult

medical staff less frequently, and exhibited greater diagnostic skills than extended roles in nursing (Drennan et al., 2011 and 2012).

The UK Association of Physician Associates (Ritsema and Paterson, 2012) records show that there are 200 physician associates in the UK. Currently 30 PAs work in 15 general practices in England, mainly in London and the Midlands. Physician associates are clustered around these areas due to the training currently being developed by a small number of higher education institutions in these areas.[6]

The teams they work in vary from single-handed GPs to teams consisting of multiple groups of professionals, including salaried doctors, nurse practitioners and healthcare assistants.

PAs offer a useful potential addition to the primary care professional workforce pool, with a shorter training period than GPs or nurse practitioners. Consequently, they should be considered in workforce and education planning at local, regional and national levels to a much greater extent than they are currently. Although relatively small in number at present, and with few working in practice settings, the CfWI sees potential scope for an increasing service contribution to general practice in England in the future. In the United States, for example, around 45 per cent of the Pas distributed by primary care specialty work in family medicine (AAPA, 2010).

The flexibility of PAs also makes them attractive contributors to secondary care provision. In the US, physician associates usually work in several specialties in their career. **Physician associates can potentially complement the work of GPs and the wider practice skill mix** by seeing younger patients with fewer indicators of co-morbidity and fewer medically acute problems, and can be deployed to triage patients and/or see same-day appointments.

All practising PAs are recommended to register on the PA Managed Voluntary Register (PAMVR). However, an appropriate level of formal regulation, and the potential for the authority to prescribe medicines, enhancing public awareness of PAs, is necessary if this workforce is to be effectively utilised.

4.6 Increasing supply

GPs are increasingly reliant on other primary care professions to help meet growing patient demand. The practice nurse, healthcare assistant, physician associate and advanced nurse practitioner workforces have the potential to significantly expand in size, provided current obstacles are tackled.

These obstacles include a lack of consistent curriculum and training standards, appropriate formal regulation, and a career structure that allows progression. **The CfWI recommends that Health Education England work with professional and regulatory bodies to seek to overcome these obstacles.**

There is also a need for better data on practice nurses, direct patient carers and the wider primary care workforce by the time of the next workforce review. The CfWI would be pleased to assist with any initiatives to build the evidence base on the primary care workforce.

[6] Such as the University of Birmingham, Wolverhampton University, St George's Medical School at the University of London, and the University of Aberdeen in Scotland.

5. GP workforce supply

5.1 Trends in GP training

Figure 10 shows the number of vacancies, applicants and accepted offers for GP postgraduate training in England since 2009. After falling in the two years to 2011-12, there was a 9 per cent increase in applicants for GP training in the last two years, resulting in a higher competition ratio. While a welcome improvement, it is too soon to be confident that the recent pick-up in GP trainee applications is sustainable.

The number of advertised GP training vacancies has averaged 2,699 per year between 2009-10 and 2013-14. The number of accepted offers has likewise been fairly stable. Although there was an increase in both vacancies (+71) and accepted offers (+75) in 2013-14, this was less than the estimate used in the modelling for the CfWI's *Preliminary findings* (CfWI, 2013a).

Figure 10: GP postgraduate trainee recruitment, England

Sources: See Table B1 in Annex B

The fill rate has remained consistently high (above 99 per cent) in recent years. However, neither the number of training vacancies nor accepted offers has altered much over the past five years, despite recruitment targets calling for a step increase. A combination of inertia and resistance to rebalancing the system towards primary care appears to have hindered attempts to expand GP training in recent years.

The majority of current GPs in training work and train full time. About 12 per cent work and train less than full time (LTFT). The average participation rate of LTFT GPs in training is 0.58, which is approximately three days a week.

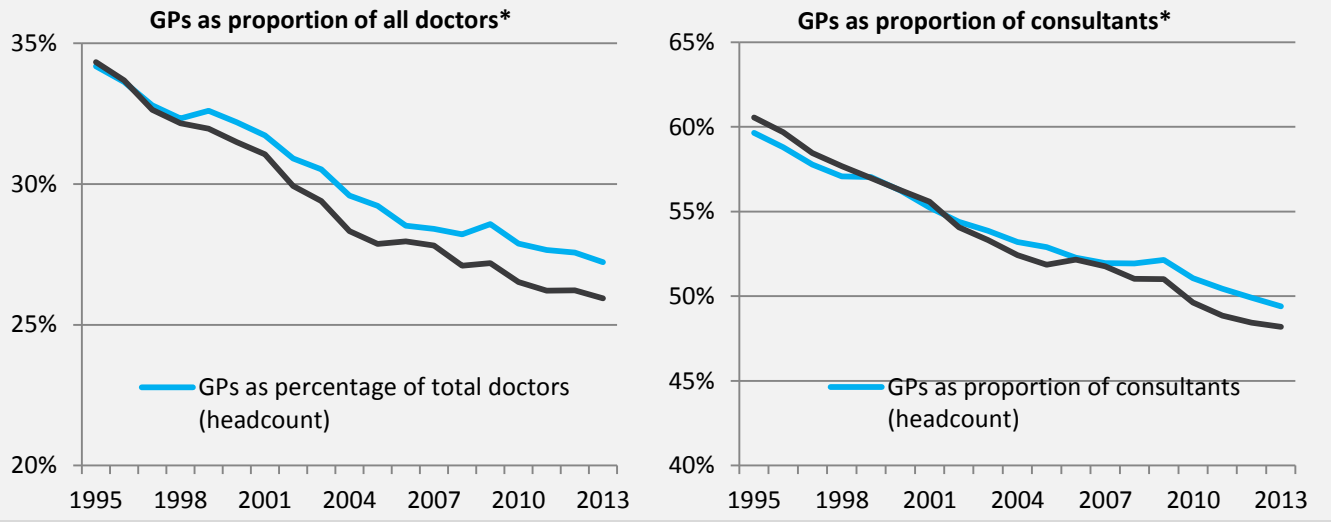
This less-than-full-time participation rate means these doctors in training will take at least five years to complete their training, compared to three or four years for the majority, and will therefore reduce the rate of production of trained GPs.

The failure rate of GPs at the end of training, the consequent need for training extensions and the need for small numbers of trainees to be removed from training will also reduce the number of trained GPs.

Nonetheless, the latest GMC's National Training Survey found that 'doctors in training in general practice posts are the most satisfied, which has remained the same over previous surveys' (GMC, 2013).

5.2 Trends in the GP workforce

Figure 11: GPs as a percentage of all doctors and of consultants – England 1995-2013



Source: HSCIC (2014), CfWI analysis *excluding GP locums, registrars and retainers

There has been both significant growth in the size of the NHS medical workforce, and a shift in its balance from general practice towards secondary care. **Between 1995 and 2013 the number of GPs grew by 22 per cent** to 32,075, excluding locums, trainees and retainers (FTE basis) (HSCIC 2006b, 2013). On a headcount basis, the increase was 30 per cent[7]. This increase was slower than the growth in both the total NHS staff and the medical workforce over that period.

The size of the GP workforce in England peaked in 2009 and has remained relatively flat in the following four years on both a headcount and FTE basis.

As Figure 11 shows, GPs as a proportion of the total medical workforce in England fell from more than one-third in 1995 to around one-quarter in 2013. GPs fell from almost three fifths of all fully trained medical practitioners (NHS employed CCT holders) to less than half between 1995 and 2012.

On a per capita basis, the number of GPs per 100,000 people in England was unchanged at 54 between 1995 and 2002, and then gradually increased to a peak of 61.5 GPs in 2009. The last four years has seen modest per capita declines to 59.6 GPs per 100,000 people in 2013, as the GP workforce failed to keep up with population

[7] The 30 per cent increase is likely to be an understatement, as the HSCIC introduced a more stringent headcount methodology in 2010.

growth. This is consistent with the gradual decline in real spending on GP services since 2005-06 (NHS England, 2013b):

> *Spending on general practice, if taken separately from the whole of primary care spending, has reduced by about 0.2 per cent annually in real-terms since 2005/06. This increased pressure on primary care means that some patients may have found it more difficult to access services quickly, leading to a rising demand for other urgent and emergency care services.*

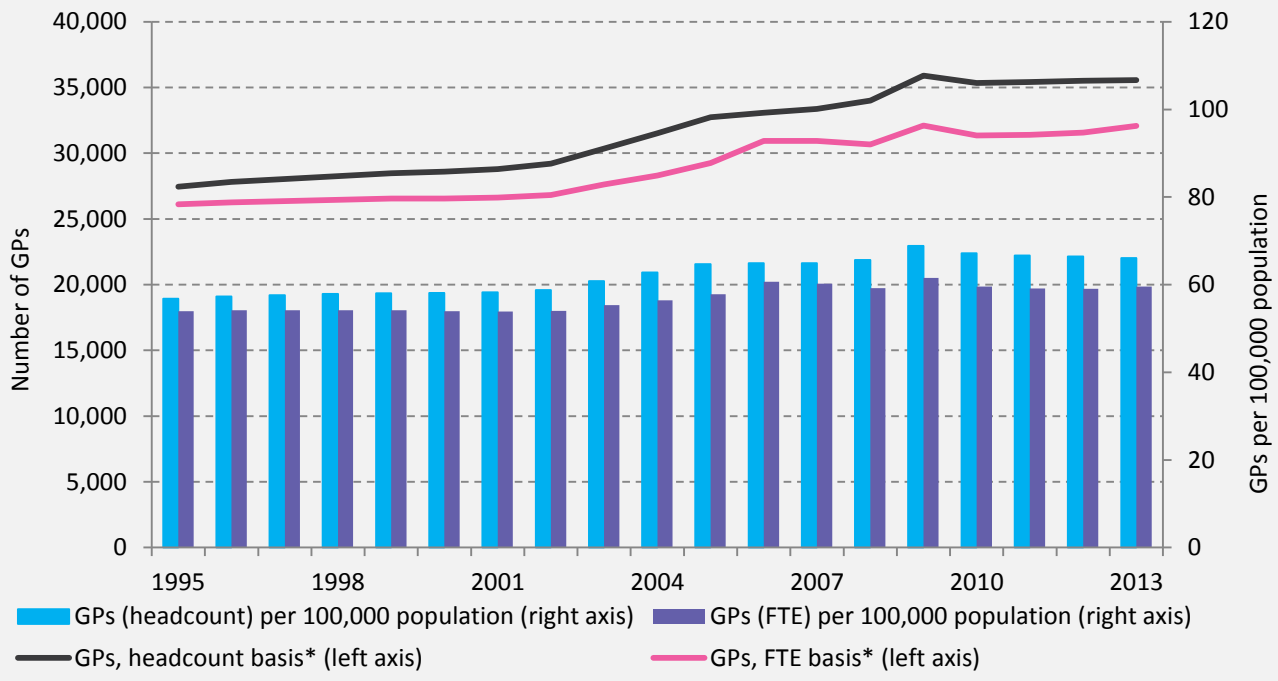
Deloitte (2014) estimates that a 12 per cent funding gap opened up in general practice funding across the UK.

The national picture hides marked local and regional variation, with access to GPs still unequal between areas of high and low deprivation, and localities underserved across the country (see section 6, below, for more details).

Immigration to the UK has been a major demographic trend of the past 60 years and is reflected in the composition of the healthcare workforce. As Table B2 shows in Annex B, the GP workforce is gradually becoming ever more international. By 2011, 77.6 per cent of GPs had undertaken their initial medical training in the UK, down from 81.5 per cent in 2001.

The incomers are largely from outside the EEA – 17.8 per cent of the workforce, compared with 4.6 per cent from the EEA (HSCIC, 2012a). Although it would appear that general practice is significantly dependent on overseas-qualified doctors, the proportion is below that of the total medical workforce in England, of which only 64.3 per cent qualified in the UK (HSCIC, 2012b).

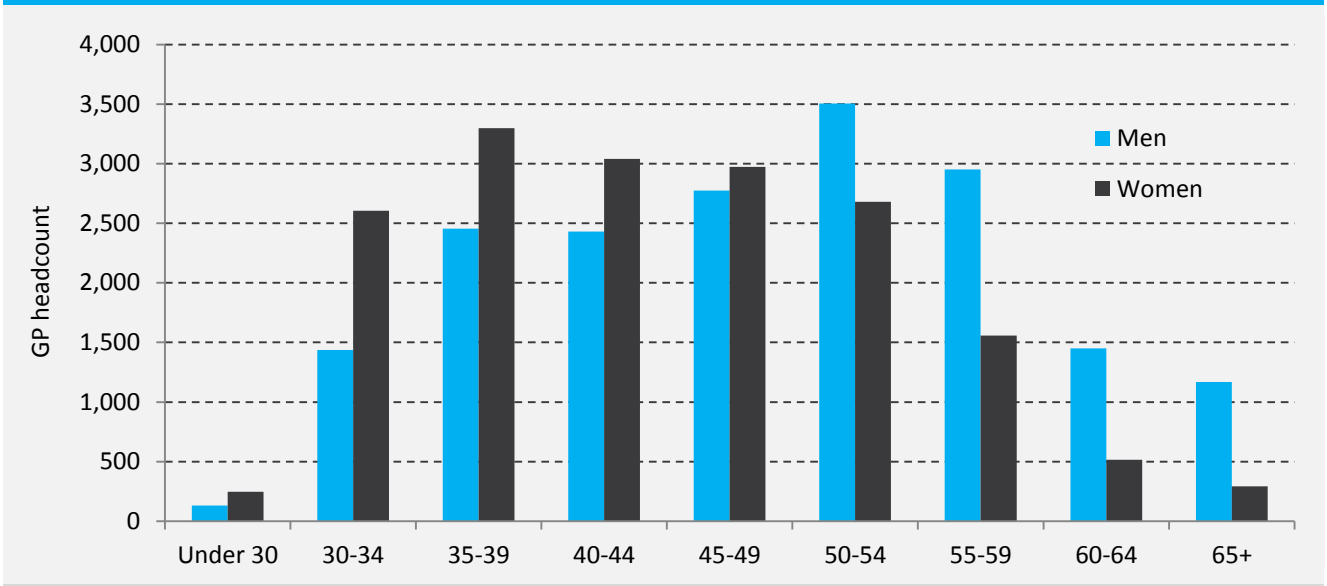
Figure 12: Trends in the GP workforce, England, 1995-2013



Source: HSCIC (2014) and ONS (2013c) *Excluding GP locums, registrars and retainers

5.3 Age and gender of GPs

Figure 13: GP headcount by age band and gender, 2013



Source: HSCIC (2014)

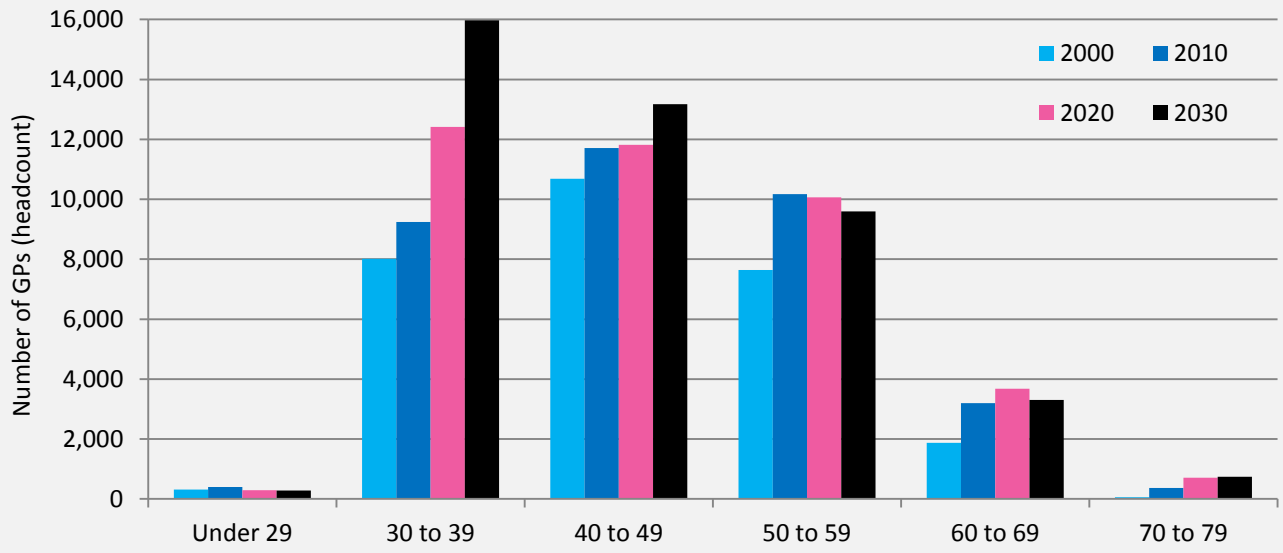
In 2010, 54 per cent of students entering medical schools in England were women (GMC, 2011). The large increase in the proportion of women entering medical school has led to a more equal gender balance both in GP training and the GP workforce. In 2012, 65 per cent (2,176) of entrants to GP specialty training were women, according to GMC data.

This changing gender mix is reflected in age and gender profile in Figure 13. There are more women GPs under the age of 40 than men, and more men than women in the higher age bands, from 50 onwards. The same pattern applies for the FTE age profile. The CfWI expects that women will soon form the majority of the GP workforce (on a FTE basis).

Although the number of GPs aged 40 or older is set to increase in the two decades to 2030, Figure 14 shows that the much larger increase in those under 40 should see the average age of the GP workforce drop. The biggest increase will be in GPs in their 30s, whose numbers are projected to increase by more than 6,700 by 2030.

The age of the GP workforce has implications for the participation rate, with GPs over 60 having lower participation rates than their younger colleagues.

Figure 14: Actual and projected age band of GPs – 2000 to 2030

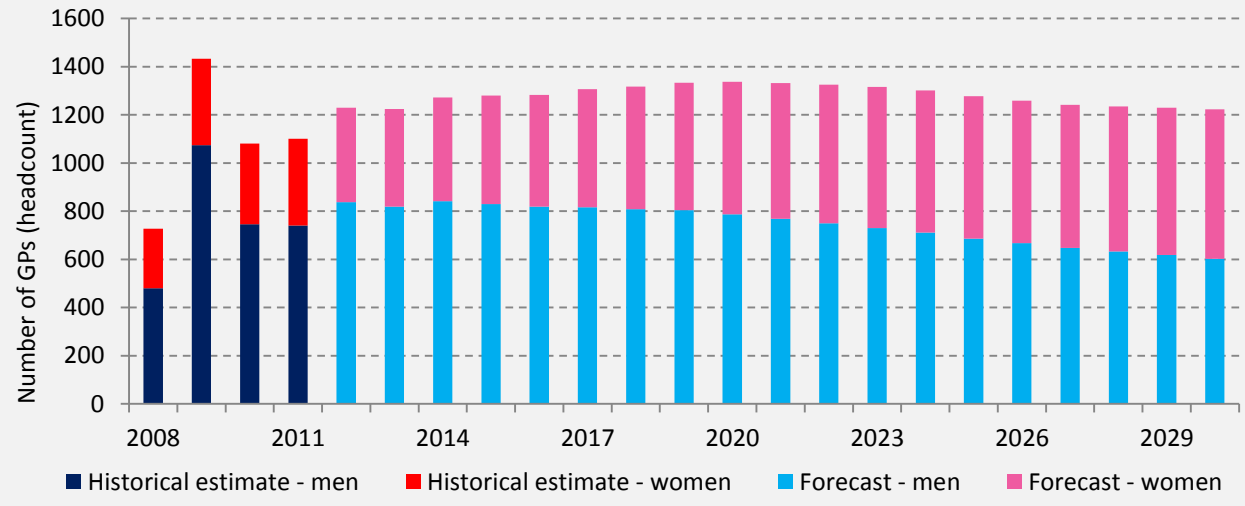


Source: HSCIC (2014) and the CfWI medical workforce system dynamics model for England

5.4 Retirement and other leavers

Figure 15 shows the historical and projected retirements per year for GPs. The historical data (2008 to 2011) is calculated by comparing the number of GPs aged 49 or over (year on year, by age) to derive a representation of the number of retirements. The median (most common) retirement age over this period was 59, with 49, 54, and 64 also common ages for retirement, while the mean (average) retirement age was 58 for women and 60 for men.

Figure 15: Historical and projected GP retirements per year, by gender, 2008 to 2030



Source: HSCIC (2009 to 2014) and CfWI medical workforce system dynamics model for England

The data from 2012 onwards is a forecast from the CfWI's medical workforce system dynamics model. It uses the historical probability (2008 to 2011) of retiring at a given age to forecast how many GPs will retire from the future workforce. This is the assumption that is used in the CfWI's baseline forecast for GP supply (shown later in Figure 24).

The chart shows that there are currently more men retiring from GP contracts than women, reflecting the greater proportion of men in the workforce. The shift to a more gender-balanced workforce is shown in the forecast by the trend towards an equal number of retirements among men and women in the longer term.

According to the BMA's *National Survey of GP Opinion 2011* (BMA, 2011), 13 per cent of respondents reported an intention to retire in the next two years, across the UK. Respondents who indicated they intend to retire in the next two years were most likely to be aged between 58 and 60 (35 per cent); 26 per cent of respondents intending to retire in the next two years were below the age of 58. Survey respondents were most likely to be aged between 50 and 54 years. This is broadly in line with the age distribution for the GP workforce in the UK.

An advantage of the BMA survey is that it asks those intending to retire what plans they have made, which should filter out respondents whose intentions are vague. Of those respondents intending to retire in the next two years, 86 per cent reported having sought or obtained financial advice, and 37 per cent reported having given notice to their practice. Historically, such planning has been a reasonably reliable indicator of actual retirement rates a year or so later.

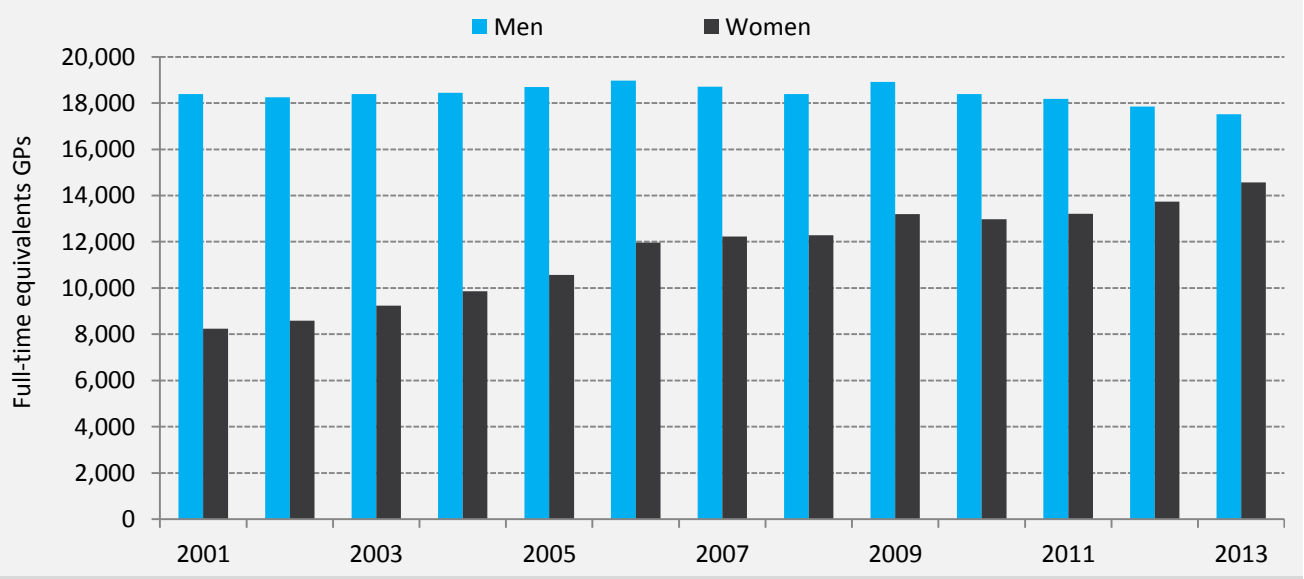
The latest BMA quarterly tracker survey (2014) found that that in the past year around 57 per cent of GPs responding said they had considered retiring early, 28 per cent had considered leaving the profession entirely, and 24 per cent had considered working overseas.

The *Seventh National GP Worklife Survey* (Hann et al., 2013) reported a substantial increase over the last two years in the proportion of GPs intending to leave patient care:

> *The proportion of GPs expecting to quit direct patient care in the next five years had increased from 6.4% in 2010 to 8.9% in 2012 amongst GPs under 50 years-old and from 41.7% in 2010 to 54.1% in 2012 amongst GPs aged 50 years and over.*

5.5 Gender and participation rate

Figure 16: GP workforce by gender, 2001 to 2013*



Source: HSCIC (2014) *Excluding GP locums, registrars and retainers

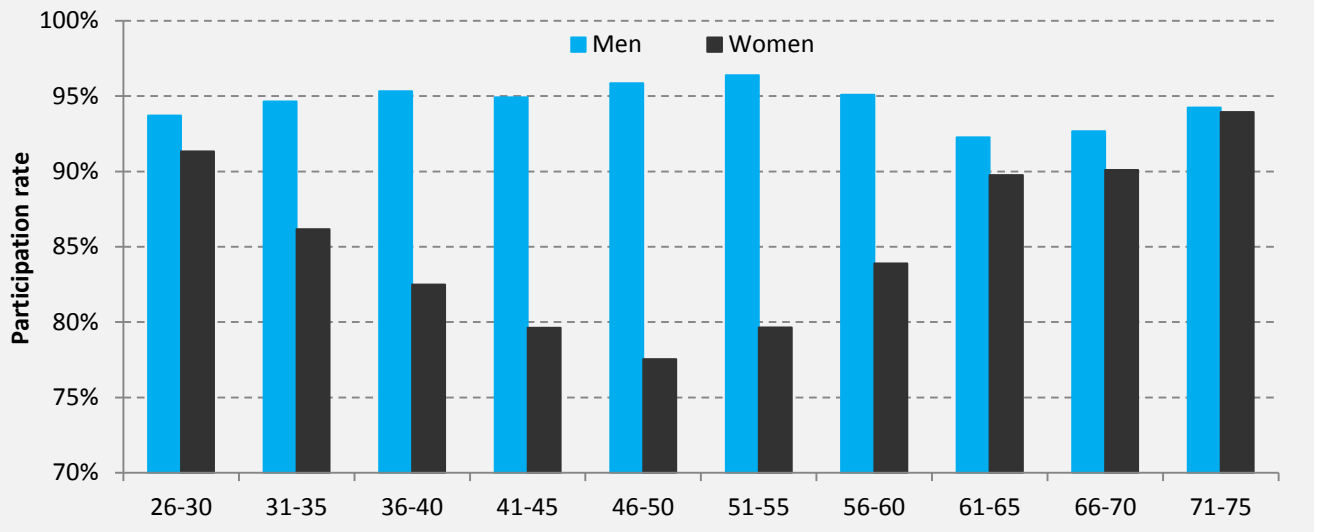
The GP workforce gender split in 2013 was 55 per cent men and 45 per cent women on a FTE basis (see Figure 16). The average annual percentage change between 2001 and 2013 was much higher for women GPs (+4.9 per cent) than men (-0.4 per cent). This gender split has implications for workforce planning, as women's average lifetime participation rate is lower than that of men, based on historical data (HSCIC, 2012a).

Trends in GP participation rates are dependent on both age and gender, as shown in Figure 17. From 2008 to 2013, men had an overall higher participation rate than women, who are more likely to work less than full time. The CfWI's projections show women will soon comprise the majority of GPs in England; an increasing number have become equity partners in group practices.

However, increasing numbers of young GPs are entering practice as salaried doctors – and most of these are women working less than full time (Royal College of Physicians, 2009). At present, salaried posts comprise a small proportion of all GP posts, but this sector may expand in the future. Salaried, part-time practice could become the long-term mode of working for a large number of GPs.

For women, there is more variation in the participation rate within the different age groups. Younger women GPs have a higher participation rate, which declines with age. However, if women are still working beyond the age of 60, their participation rate is high compared to younger women. Since 2008 there has been a steady decline in the participation rates of older women GPs. For men, participation rate between 2008 and 2012 remained steady, being above 0.90 for all age groups, as illustrated in Figure 17).

Figure 17: Participation rate of women and men GP providers, by age band, 2012



Source: HSCIC (2013a)

5.6 Locum and freelance GPs

Locum GPs (also known as freelance GPs) play a large role in the GP workforce, with important roles in the delivery of out-of-hours care and in helping to address short-term workforce shortages.

Becoming a locum GP is an attractive option for those wishing to pursue a greater work-life balance, or not wishing to commit the financial, professional and personal investment of becoming a GP partner. The locum option also helps to facilitate the development of a portfolio career.

An overreliance on locum GPs creates problems of providing continuity of care, as well as a financial burden for practices that are having problems recruiting a GP partner.

Locum and freelance GPs perform an increasingly prominent role in the delivery of primary care services, but data regarding their numbers is not available. Data on locums is not collected by the HSCIC, and thus they have not been included in the CfWI's GP supply figures. A rough estimate[8] is that there are 15,500 locums across the UK (NASGP 2008), but the CfWI has reservations about using this figure. Therefore, **the CfWI recommends urgent attention to improved collection of data on locum and freelance GPs**.

Improved data would help inform workforce planning and provide a fuller picture of the GP workforce. Through looking at the available data, some observations can be made. Almost 22 per cent of the locum workforce intends to retire in the next two years, suggesting that a significant proportion of the current locum workforce is over 55. Many locums also work as salaried GPs. This proportion is the highest of the seven GP types surveyed[9] (BMA 2011). Becoming a locum GP is also an attractive option to GP trainees, with 25.6 per

[8] This figure is achieved by subtracting the number of GPs recorded by the (then) NHS IC from the total registered to the GMC.

[9] The categories used are: GP contractor / principal, practice-employed salaried GP, NHS trust-employed salaried GP, private sector-employed salaried GP, freelance GP (locum), GP trainee and other.

cent hoping to pursue this option, at least initially after completing their training. Locum GPs are also unlikely to be involved in commissioning, with 2.1 per cent surveyed personally involved with a CCG, compared to 19 per cent of GP partners (ibid.).

This relationship works both ways, with 48 per cent of CCGs regularly communicating with their sessional GPs – though with a lack of data or a list of locum GPs, a CCG's engagement with its full GP workforce is difficult (Howe et al., 2012). Locum GPs are becoming an increasingly prominent sector of the GP workforce, and further data and analysis is required in order to ensure they contribute to commissioning and service delivery in a joined-up manner, rather than simply plugging gaps in service.

6. Regional and local variation

6.1 Regional variations

The health inequalities caused by the imbalance in the local and regional distribution of GPs and other primary care workers has been an enduring policy issue since the founding of the NHS (Butler et al., 1973; Carr-Hill, 2001). This problem has been acknowledged by the Department of Health and NHS England (2014):

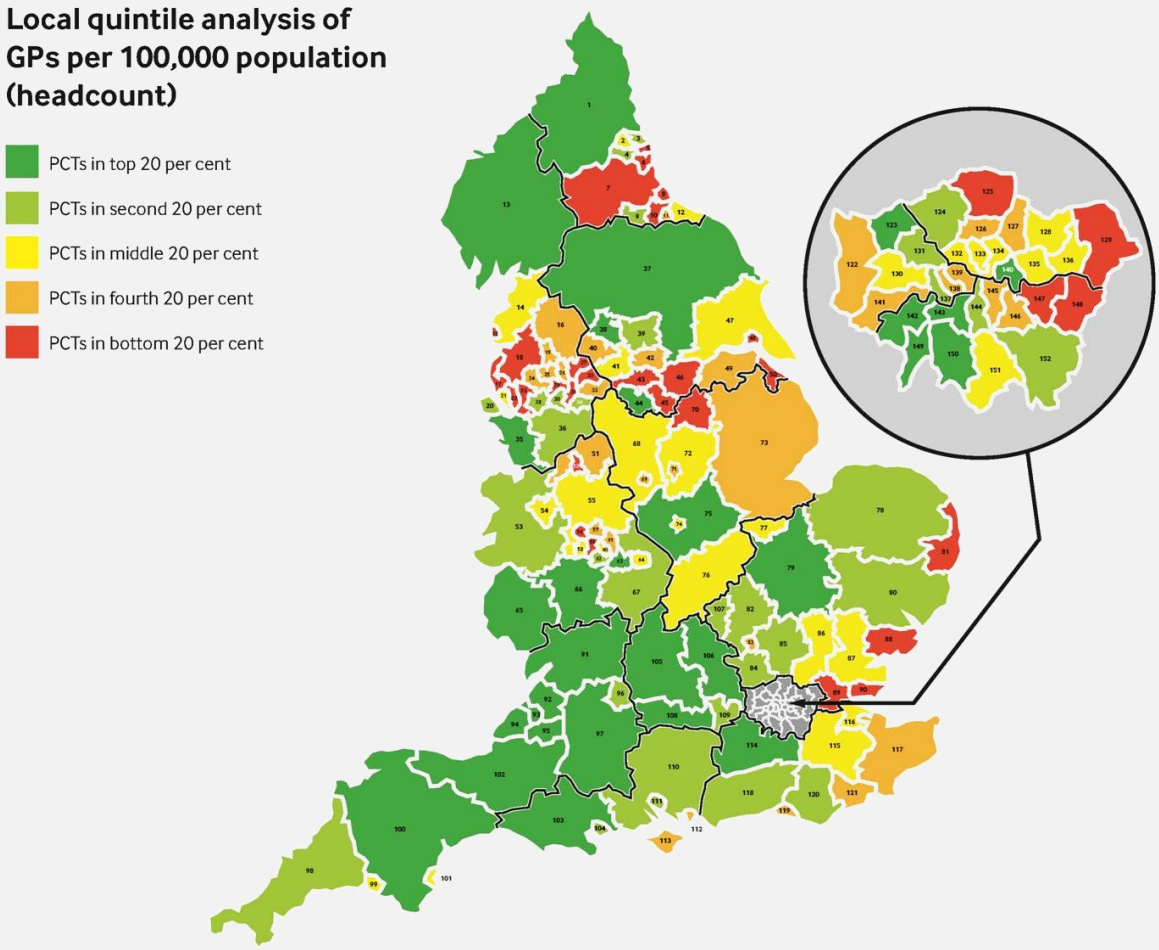
> *There are long-standing inequalities in numbers of GPs and general practice nurses, particularly in deprived areas and rural or remote areas.*

Prosperous rural and suburban areas may find it easier to recruit GPs than deprived urban or isolated, poorer rural areas. Poor local amenities, smaller practices and a higher workload generated by a disadvantaged population act as disincentives for GPs to work in such areas (Sibbald, 2005). Likewise, a National Audit Office report on health inequalities (NAO, 2010) found:

> *The number of GPs in areas with the greatest health needs has increased in recent years but GP levels, weighted for age and need, are still lower in deprived areas.*

Although the numbers used to map regional GP vacancies in England (see Table B3, Annex B) are from voluntary questionnaires, seven of the 10 SHA regions had seen an increase in vacancy rates between 2008 and 2010.

Figure 18 : Quintile distribution of GPs per 100,000 people by primary care trust (PCT) area



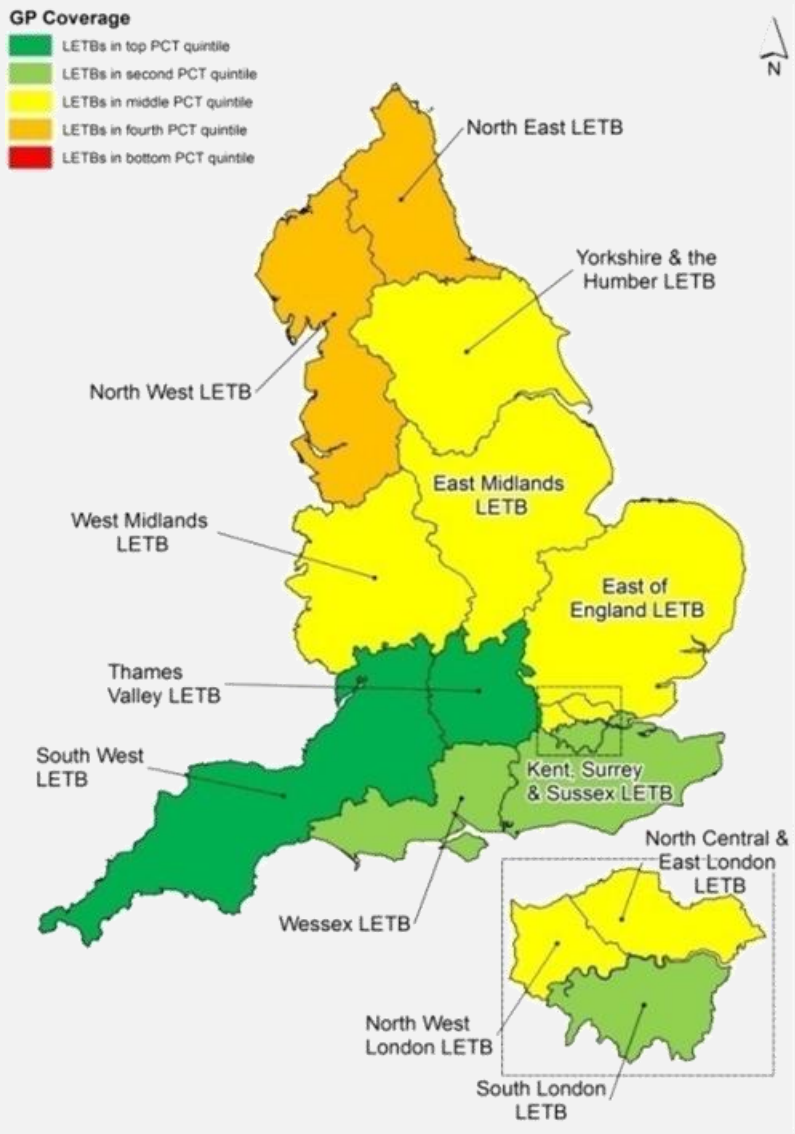
Source: CfWI analysis of HSCIC (2013a) *excluding GP locums, registrars and retainers

Methodology

To assess regional variations in GP supply, the CfWI analysed numbers at a LETB level by grouping together the figures for the former primary care trusts (PCTs) to reflect the new administrative boundaries. The CfWI recognises the diversity of each LETB region, so drilled down further to the historical PCT level[10], to reflect further local variations. Three measures have been analysed: coverage of GPs per 100,000 people (using GP headcount data), the proportion of GPs aged over 55 in the workforce, and rural/urban distribution. For the population analysis, the CfWI project team used weighted population[11] figures. They also analysed the possible link between GP coverage and deprivation. The full data for this analysis can be found in Table B4 in Annex B.

[10] CCG-level data is not yet available, and the PCT-level data is the most current available.
[11] The weighted population figure takes into account local population demographics and health needs in order to produce a figure more representative of varying levels of need.

Figure 19: Quintile distribution of GPs per 100,000 people by HEE LETB region*



Source: CfWI analysis of HSCIC (2013a) * excluding GP locums, registrars and retainers

6.2 Regional variation in GPs per capita

Figures 18 and 19 show the quintile distribution of GPs per capita by primary care trust (PCT) and LETB region respectively. The Health Education North West and the Health Education North East regions have the lowest GP coverage, having 63.4 and 63.6 GPs per 100,000 respectively. Thames Valley and the South West[12] have the most comprehensive GP coverage, with 81.5 and 79.5 GPs per 100,000 respectively. Nine of the 13 LETB regions have former PCT areas with the highest and lowest levels of deprivation by quintile, suggesting that **addressing local GP supply is an important issue for the majority of HEE's LETBs**.

In terms of GP coverage and deprivation[13], the poorest quintile of PCTs has a considerably lower number of GPs (62.5 per 100,000) than the richest quintile (76.2 per 100,000).

At PCT level, 35 per cent of the most deprived quintile PCTs are also in the quintile with the least GP coverage, and 71 per cent in the bottom two quintiles. For the most affluent quintile, 55 per cent of PCTs are also in the quintile with the best GP coverage. This compares to 37 per cent of PCTs in the most deprived quintile which are also in the least-GP-covered quintile, with 63 per cent of PCTs in the most deprived quintile in the bottom two quintiles for GP coverage.

The geographical distribution of GPs is linked to regional training capacity and programmes, with most GPs taking their first job in their region of training. **The current distribution of GP training practices may have contributed to inequality in the levels of GPs across the country over the past two decades**, even as the overall number of GPs has increased.

6.3 Age profile and regional variations

Analysing the number of GPs over 55 enables the prediction of a possible wave of retirements that could leave a local GP workforce undersupplied.

CfWI analysis found that 11 PCTs have more than 35 per cent of GPs over the age of 55. Of these 11, six are in the three London LETB regions, with two in the West Midlands, two in the East of England and one in Kent, Surrey and Sussex. Of the non-London LETBs in this group, a further two could be counted as wholly urban (Heart of Birmingham PCT and Coventry Teaching PCT), suggesting that urban areas may have older GP workforces.

This is reflected in the data in Table 2 below, which shows PCTs classed as urban having higher percentages of GPs over 55. However, although Health Education North Central and East London has five of the oldest GP populations, it also has the sixth youngest workforce (Tower Hamlets PCT). This indicates that **variation is highly localised, and neighbouring areas can have very different GP workforces**. Fifty six PCTs have fewer than 20 per cent of GPs over the age of 55. All 13 of HEE LETB regions have at least one PCT area with less than 20 per cent of GPs aged over 55, with the North West having 10 PCTs in this grouping through to Thames Valley with one.

[12] Due to the former Wiltshire PCT being divided between Health Education South West and Health Education Wessex (with the area covered by the Salisbury Acute Foundation Trust now in Wessex, and the rest of Wiltshire in the South West) the figures for Wiltshire PCT have been included in the South West. Therefore, figures for the South West and Wessex need this qualification.

[13] The deprivation data is from the Department for Communities and Local Government's *English indices of deprivation 2010* (2011), and the Rank of Average Data score was used.

Health Education North Central and East London has the oldest GP workforce, with 30.2 per cent over 55, with Health Education North West London next at 29.5 per cent.

On a LETB level, the other 11 regions all have workforces with less than 25 per cent of GPs over 55. **Health Education East Midlands has the youngest workforce.**

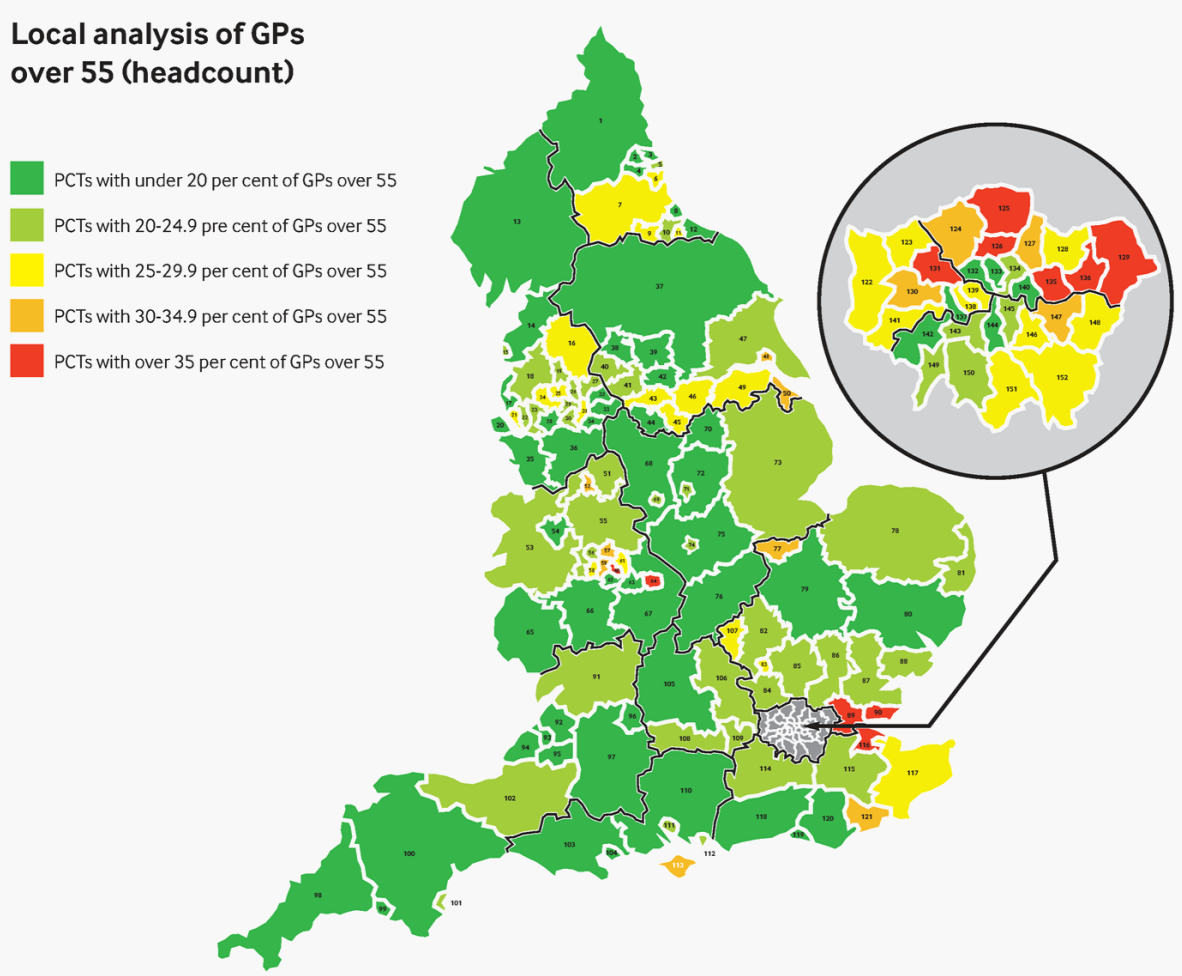
A possible reason for London having an older workforce is the difficulty in forming larger partnerships due to problems in building larger premises. Land value costs are high in London, and this brings increased financial risk. This also partly explains why **London has a higher proportion of single-handed practices than any other area** (HSCIC 2013a). GMS contract holders in London have the third-lowest income (£91,300 total income before tax) of the 10 former SHA areas, with the average income for GPs in England being £99,000 (HSCIC 2012d). A lower salary relative to high London living costs may mean GPs have to work longer in order to build up their pension fund.

Table 2: Rural/urban GP coverage

ONS Classification	All GPs (excluding retainers and registrars) headcount per 100,000 people weighted	Percentage of GPs over 55
Major urban	66.2	25.1%
Large urban	67.0	23.9%
Other urban	63.0	24.7%
Significant rural	69.1	19.8%
Rural 50	75.5	19.0%
Rural 80	71.25	20.0%

Source: CfWI analysis of HSCIC (2013a) and ONS (2010)

Figure 20: Prevalence of older GPs (over the age of 55) by primary care trust (PCT) area*

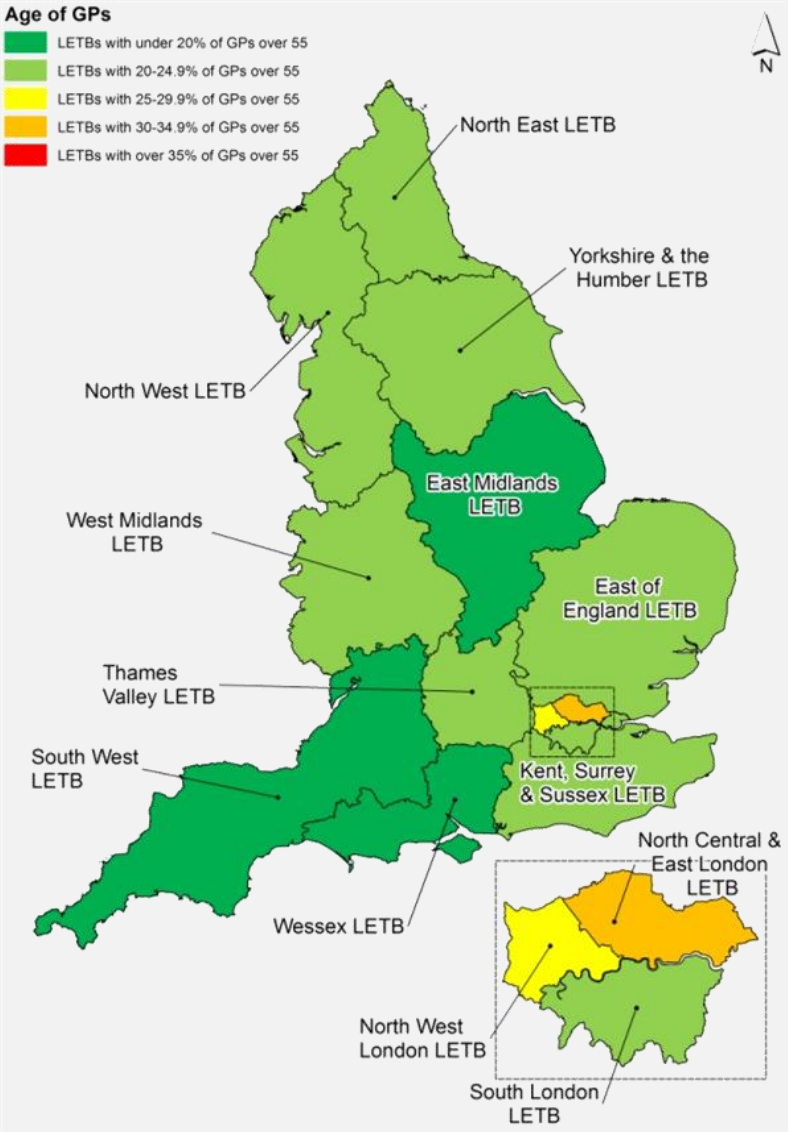


Source: CfWI analysis of HSCIC (2013a) *Excluding GP locums, registrars and retainers

6.4 Rural/urban split

Rural and urban areas have their own workforce requirements, and remote rural areas may have poor GP coverage. As Table 2 indicates, areas classified as rural (ONS, 2010) have a higher GP coverage than urban areas. However, there are rural PCTs that have low GP coverage, such as County Durham and Bassetlaw (both in the rural 50 category). No former PCTs in the three rural categories are in the most deprived quintile, but five rural PCTs are in the quintile with the lowest GP coverage. This shows that there are rural areas that have trouble recruiting GPs. Rural GPs face differing demographic challenges to their urban colleagues, and HEE's LETBs may have to tailor schemes to address rural GP undersupply.

Figure 21: Prevalance of older GPs (over the age of 55) by HEE LETB region*



Source: HSCIC (2013a) *Excluding GP locums, registrars and retainers

6.5 Tackling unequal access to GP services

The health inequalities caused by the local and regional distribution of GPs have been an enduring policy issue in the NHS. Attempts to achieve more equitable access to GP services can be achieved by various means, including:

- regulation to control GP entry into areas designated as relatively over-doctored
- targeted initiatives aimed at areas with GP undersupply (including payments conditional on location, such as weighted capitation formulas)
- general increases in workforce supply.

Since 1948 the NHS had restricted entry by GPs into areas which were classified as over-doctored. However, centralised entry controls were abolished in England in 2002 and in Scotland in 2003, and devolved to local primary care organisations. A recent study of GP supply and geographical equity in England and Scotland (Goddard, et al., 2010) found 'there was a sharp fall in equity after the abolition of (these) entry controls'.

Weighted capitation has had some success, with GP per capita supply in 2006 'positively correlated with morbidity and PCT amenity' (ibid). **Merely increasing the supply of GPs will not necessarily reduce maldistribution**, as several studies have found (e.g. Hann and Gravelle, 2004). Goddard et al. reported that 'increases in total supply can be associated with reduced or increased equity', concluding that, 'reducing geographical inequity in the provision of GPs requires targeted area level policies'.

The distribution of GPs is also linked to regional training capacity and programmes, as 67.9 per cent of GPs obtain their first career post in their region of training (Goldacre et al., 2013).

There are various ways in which the location both of GP training and general practices might be targeted in areas with lower patient access to GP services, drawing upon experience both in the UK and overseas. While the CfWI does not make specific recommendations on which policy options are preferable in order to reduce existing GP health inequalities, it does see a good case for trialling different area-based incentives and schemes to assess their impact and cost effectiveness.

It is important that the proposed increase in GP workforce supply goes where it is most needed. **The CfWI recommends that, where practicable, additional GP training posts are located where patients are currently underserved or where above-average retirement patterns are predicted.**

Given the tendency for most doctors to remain in the region in which they train, the CfWI recommends that a substantial share of the increase in training posts go towards improving support for areas with shortages of GPs to help achieve more equal access to GP services. LETBs need to be aware of undersupplied localities and seek to locate GPs in training where they are most likely to help address patient demand.

7. Workforce planning approach

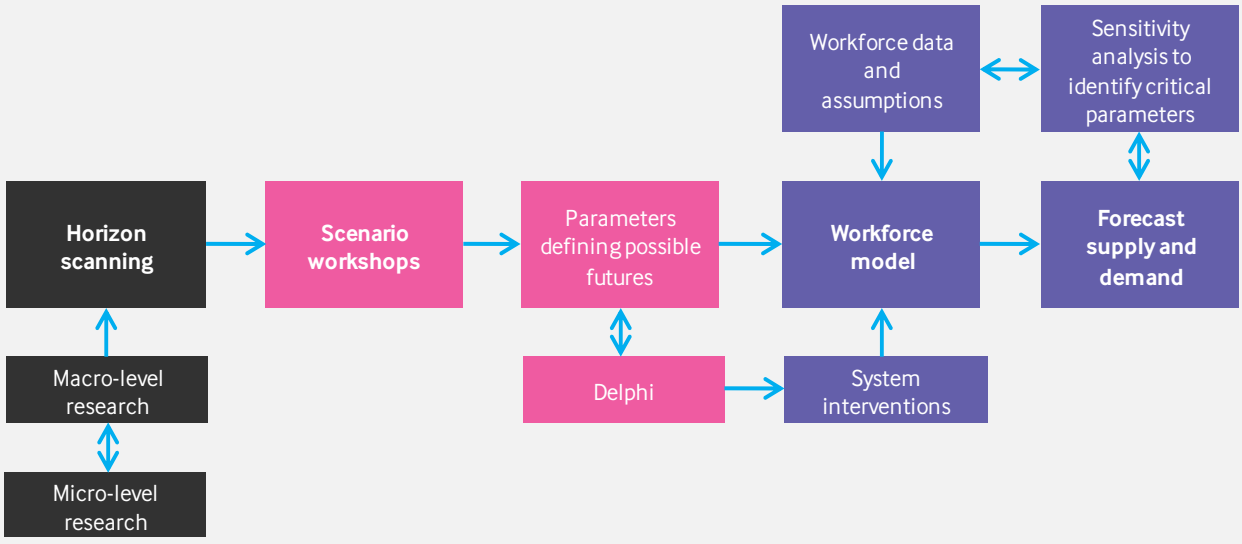
7.1 Overview

To forecast and analyse future demand and supply for the GP workforce between 2012 and 2030, the CfWI used its robust workforce planning approach, considering scenarios that bound the uncertainty about the future. The approach was outlined in Figure 1. This section provides more details of the CfWI's approach, detailed below.

- **Horizon scanning:** An examination of the potential factors which might influence the future GP workforce. The CfWI facilitated horizon scanning focus groups and one-to-one interviews with 30 stakeholders, complemented by secondary research. Further details are available on the CfWI horizon scanning website (CfWI, 2014).

- **Scenario generation and Delphi:** An exploration of how the future may unfold and the workforce implications. Using all the driving forces identified during horizon scanning, stakeholders developed six challenging but plausible future scenarios to 2030. While all should be plausible, no single scenario is a prediction of the future. As a set of six scenarios, however, they produce a reasonable set of bounds within which the future is likely to unfold. A Delphi expert panel then quantified key variables in these scenarios (further details of the scenarios are below and in Annex C, details of the Delphi can be found in Annex E).

Figure 22: How CfWI undertakes and in-depth workforce review



Source: CfWI

- **Workforce modelling:** the CfWI built a system dynamics model to provide demand and supply projections for GPs for the six future scenarios. The model uses existing data sources, values from the Delphi exercise and modelling assumptions (see Appendix D for details). As with the scenarios, these forecasts should not

be read individually as direct predictions of the future. The forecasts set a reasonable boundary within which the future is likely to unfold. They underpin the CfWI's workforce analysis and recommendations, and help inform debate and decision making on policy options.

7.2 Horizon scanning

The workforce planning approach started with horizon scanning. Horizon scanning is defined as 'the systematic examination of potential threats, opportunities and likely developments including but not restricted to those at the margins of current thinking and planning' (Government Office for Science, 2011).

In October and November 2012 the CfWI interviewed 30 GP and primary care stakeholders through focus groups (21 participants) and one-to-one structured interviews to identify the factors that may impact the demand and supply for the future GP workforce (known as driving forces).

The CfWI asked stakeholders to consider the possible technological, economic, environmental, political, social and ethical (TEEPSE) influences on the following question:

Thinking up to the year 2030, what factors will influence:

- the requirements of the future GP workforce?
- future GP workforce numbers and proportions?

The most frequently suggested driving forces were:

- **technological** – remote technology, personalised medicines
- **economic** – economic climate affecting the wider UK health economy, the continued drive for efficiency in the public and private sectors
- **environmental** – the wider impact of climate change, potential development of health pandemics caused by new or re-emerging diseases
- **political** – shifts towards person-centred care, the shift of care to the community
- **social** – the ageing population, public health initiatives, increasing service user expectations
- **ethical** – shared decision-making with patients.

The CfWI's team collated the factors identified – including maverick views. Attempts to interpret implications of the factors identified were not made, as this was the focus and task for stakeholders attending the scenario generation workshop.

Full summaries of the trends and driving forces identified during the horizon scanning process can be found in the CfWI *GP in-depth review: Horizon scanning* (CfWI, 2014).

7.3 Scenario generation

Following horizon scanning, the CfWI gathered stakeholders to develop six challenging but plausible scenarios for the GP workforce in England to 2030.

Participants at the GP scenario workshop

A scenario is defined as 'an internally consistent view of what the future might turn out to be – not a forecast, but one possible future outcome' (Porter, 1985). The scenarios, therefore, are not intended to describe expected, exhaustive or preferred states. They represent a plausible range of ways the future could unfold, and boundaries are set, which can be used to test policy options for robustness.

Using all the driving forces identified during horizon scanning, participants were asked to look for causal and chronological relationships between the driving forces, and freely grouped these into 'clusters'.

The stakeholder group then evaluated each cluster, and rated the narratives for their impact on the GP workforce and the predictability of the narrative to unfold. Rating future events according to impact and predictability is the cornerstone of risk management, and the same framework is adopted here. Scenario generation methodology maintains that participants need to consider all feasible driving forces, but focus on those with the largest uncertainty and most significant consequences.

Stakeholders identified several clusters which were the least predictable and had the highest potential impact on the GP workforce. They combined them to produce and name the final six scenarios, each describing an extreme but plausible outcome for the GP workforce by 2030. The individual scenarios are not of particular interest; what matters more is the range of uncertainty.

The six scenarios for the GP review are summarised in Table 3. Please note that these driving forces and scenarios were developed via a tried-and-tested process by a diverse group of stakeholders. They do not, therefore, represent the views of any single organisation such as the CfWI, the DH, HEE, or any professional body**.**

Table 3: Scenario summary table

(S1) Scenario 1: 'Happy GPs, excellent patient care'	(S2) Scenario 2: 'GPs good, commissioners bad'	(S3) Scenario 3: 'Right plan, but wrong tools'	(S4) Scenario 4: 'Meltdown in care'	(S5) Scenario 5: 'Technology through regulation'	(S6) Scenario 6: 'Rise of the machines'
Key assumptions					
Patient-driven workforce development	Patient-driven workforce development	Professionally driven workforce development	Professionally driven workforce development	High regulation of technological developments	Low regulation of technological developments
Perceived increase in the status and attractiveness of the GP profession	Perceived decrease in the status and attractiveness of the GP profession	Perceived increase in the status and attractiveness of the GP profession	Perceived decrease in the status and attractiveness of the GP profession	Reliable products with public buy-in	Unreliable products
Key trends					
Increased patient and public involvement in planning and decision-making	More flexible working practices leading to GPs becoming accredited with a special interest area	Instability from reform leading to tension between GPs and politicians	Lack of organisational cooperation leading to fragmentation	Well-planned use of technology, with training and job roles considered	Patient as a powerful consumer
Extension and significant investment in GP training, Foundation Year 2 to include a compulsory primary care rotation	Fluctuations in public perceptions of GPs	Privatisation of primary care	Interest groups and patients' views not working towards the long-term benefit of the profession and poor workforce planning	Involvement of the public and patients in decision-making	Reshaping of the primary care workforce through the creation of a new, low-paid role
Services increasingly delivered in the community, with better coordination between primary and secondary care	Primary care not serving needs of the patients	Coordination of planning through a plurality of providers	Reduction in flexibility of the GP role	Caution from both the public and public institutions in the use of technology	Poor strategic thinking

Source: CfWI scenario generation workshop. See Annex C for more details.

7.4 Delphi panel exercise

The final six scenarios were documented in narrative form, which therefore needed to be quantified for the purpose of modelling.

Two approaches were taken for modelling. The first used existing data sources to quantify variables. The second used variables which were intrinsically uncertain and could not be determined using existing data or trends. To generate values for these variables, the CfWI used a Delphi panel exercise.

Delphi is a systematic, interactive method of forecasting and quantifying unknowable variables. Stakeholders representing a cross-section of the GP and wider primary care workforce participated in two rounds of Delphi from January to February 2013.

The CfWI team used an online survey to administer the Delphi questionnaire, and during the first round participants were first asked to read the six scenarios. They were then asked to answer a series of questions asking them to make quantitative judgments about uncertain future variables. The team asked questions about variables needed for the model such as 'what will the future retirement age be?' for each scenario, by sector and gender, where appropriate. For each answer, participants were also asked to provide a rationale for their judgment.

Between the first and second rounds of Delphi, participants received an anonymised summary of other participants' answers to the questions, as well as the rationales for their judgments. During the second round, each participant had the opportunity to revise their initial predictions based on the reasoning of the other participants. Following the completion of the second round, the median scores were calculated along with the standard deviation for each question. Where it was clear that participants were unable to make a quantitative judgment, as determined by their rationales, these scores were removed before calculating the median values.

For each question, participants typically converged somewhat towards a consensus during the second Delphi round, and the median values were used as inputs to the workforce modelling process. The Delphi panel exercise offers a method in which intrinsically uncertain values can be systematically generated and tested. However, it should be noted that these values (such as future changes to the retirement age or participation rate) remain uncertain by their very nature. It is best practice in modelling to quantify the uncertainty that is inherent in any forecast of the future. Decision-makers need to understand this to inform their analysis of findings and to make effective decisions.

Here, the CfWI is forecasting up to 2030. It is not possible to predict the future with certainty, which is why the CfWI uses a scenario-based approach, to characterise this uncertainty and identify plausible future conditions.

A list of questions and quantified variables obtained from the Delphi panel exercise is in Appendix E.

7.5 Workforce modelling

Once the Delphi panel exercise was complete, all of the inputs for the workforce model were defined and quantified. The inputs were:

- **facts the participants knew** – baseline data to populate the model, e.g. current training and workforce numbers
- **assumptions the participants made** – predictable trends and assumptions needed where data was not available or was of poor quality

- **assumptions derived from Delphi** – intrinsically uncertain variables that may vary by scenario, and were quantified using the Delphi panel exercise
- **parameters that could be controlled** – parameters that policymakers can use to adjust demand and supply so that they are in balance
- **key policy drivers** – as outlined in Section 3.1 above.

The purpose of the CfWI's workforce modelling is to project demand and supply for GPs for a range of plausible futures, as described by the six scenarios.

The CfWI demand modelling broadly follows a framework from a Canadian research programme on health human resources (Birch et al., 2011). The framework separates out four key elements of demand:

1. **population** – the size of the population being served, by age and gender
2. **level of need** – the needs of the population given the distribution of health and illness, and future risk factors
3. **level of service** – the service planned to be provided according to the population's level of need
4. **productivity** – the ability of the workforce to deliver the necessary services, taking into account factors such as skill mix and technology.

The CfWI chose this framework because it provides a clear, logical separation of the key factors and allows the use of the Delphi panel exercise described above to quantify them.

System dynamics modelling makes extensive use of simulation in order to understand how a system changes over time. It represents changes to a system by using the analogy of flows of stocks (people, money, materials) accumulating and depleting over time. In the CfWI models, 'stocks of people' can be segmented by age and gender, where data exists. Figure 23 shows the main different stocks and flows of the medical workforce supply model used for this review.

The CfWI used an updated, revised and extended version of the medical workforce supply model previously used in its work on medical student intakes for the Health and Education National Strategic Exchange (HENSE) (see HENSE, 2012 and CfWI, 2012a and 2012b for details).

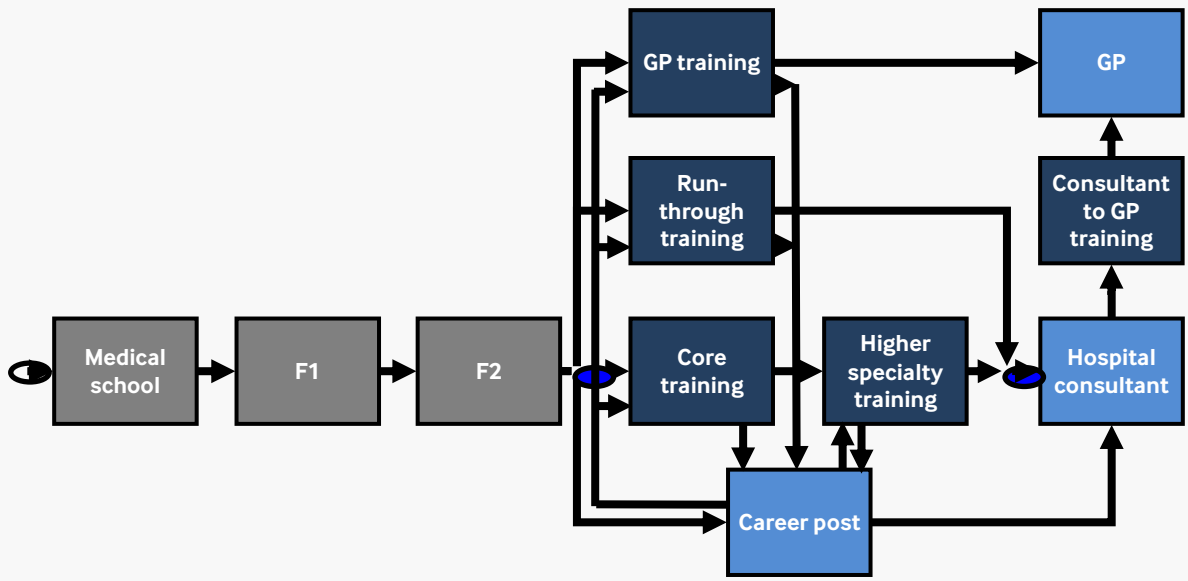
The CfWI chose Vensim DSS© to model the complex flows of medical training and workforce in order to forecast the future demand and supply of GPs. The chosen software was able to handle the complexity of modelling supply, including the ageing of the workforce. The CfWI has formally tested and validated the model to ensure reliability.

A wide range of data sources, of varying quality, were used in this project. Annex D sets out the main data sources and provides an assessment of their quality.

In addition to the values quantified using the Delphi expert panel, the model also used a series of calculated assumptions when data was not of the required quality or was not available. These assumptions are also detailed in Annex D.

There are significant regional variations of demand and supply across England. It is important that local workforce planning is undertaken to inform decisions that may affect variations in demand and supply. However, this work was commissioned to look at the national picture, so local variations have not been modelled.

Figure 23: Simplified medical workforce supply model stock-and-flow diagram



Source: CfWI medical workforce system dynamics model for England
Note: Not all workforce flows are shown.

7.6 Changes to data and modelling assumptions

A final caveat on these modelling results: the CfWI's demand and supply forecasts rely on data and assumptions, some of which were updated after the *Preliminary findings* report were published in March 2013.

There have been a number of changes to the CfWI's data and modelling assumptions since the *Preliminary findings*. On the demand side, the CfWI updated its assumptions for population growth and age composition of the future population in England using new Office for National Statistics projections (ONS, 2013a and 2013b).

On the supply side, The CfWI has:

- worked with the RCGP and postgraduate deans to refine the data and assumptions about delays and attrition during training
- updated actual GP workforce numbers to 2013 following publication of the latest annual GP census (HSCIC, 2014)
- updated postgraduate training numbers from 2012-13 to 2013-14, following completion of the annual recruitment round (GPNRO, 2013b)
- revised down its assumption for average workforce attrition for GPs aged under 49 from 4.0 per cent to 2.5 per cent, after analysis of a longer-time series of year-to-year transitions
- adjusted average retirement attrition assumptions after adding in the 2011 to 2012 transition data from the annual GP census

- changed the annual ST1 recruitment assumption for its baseline supply projection from 3,250 to 2,699 from 2014 onwards.

The CfWI has also reverted to a standard workforce supply baseline, which shows what would happen if current trends in training, workforce attrition, retirement and participation rates were carried forward over the projection period. This is a departure from the *Preliminary findings*, where the supply baseline assumed that GP training posts were to increase over the next two years to the former Government target of 3,250. This was replaced by the new HEE mandate (DH, 2013a) discussed in Section 3.2 above.

More details on these changes can be found in Annex D.

8. Workforce supply scenarios

8.1 Baseline supply projections

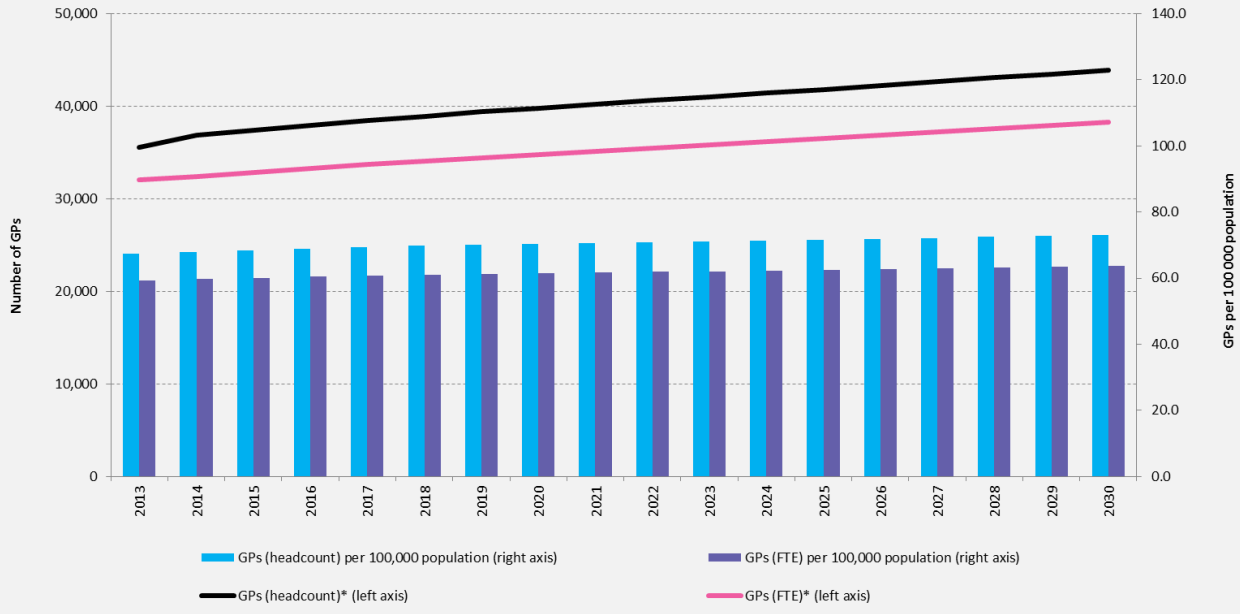
The baseline supply projection holds key modelling assumptions (e.g. staff attrition and retirement rate) for workforce supply as they are now, and extrapolates them forward over the projection period to 2030. The CfWI assumes that the number of training posts remains the same as their average over the past five years (2,699). More details of the CfWI's modelling assumptions can be found in Annex D. Creating a baseline requires workforce data from a range of sources, coupled with a number of modelling assumptions (see Annex D). It enables comparison with the CfWI's range of plausible future scenarios, in which supply is either 'better' or 'worse' than the baseline.

Baseline supply is projected to increase by 9 per cent between 2013 and 2020, to around 34,815 GPs (FTE basis). By 2030, the end of the projection period, baseline supply is projected to increase by 19 per cent to around 38,280 GPs (FTE basis), compared with the 2013 level of 32,075 FTE. This is an annual workforce growth rate of 1.0 per cent.

Figure 24 shows projected GP numbers from 2013 to 2030, together with the estimated ratio of GPs per 100,000 people using the CfWI's baseline supply projections.

It shows a steady rise in the number of GPs and a much slower improvement in the ratio of GPs per 100,000 people. Based on the baseline supply projection, **the CfWI expects the GP per capita ratio to return to its 2009 peak by around 2015.** However, patient demand would have increased markedly over those 6 years.

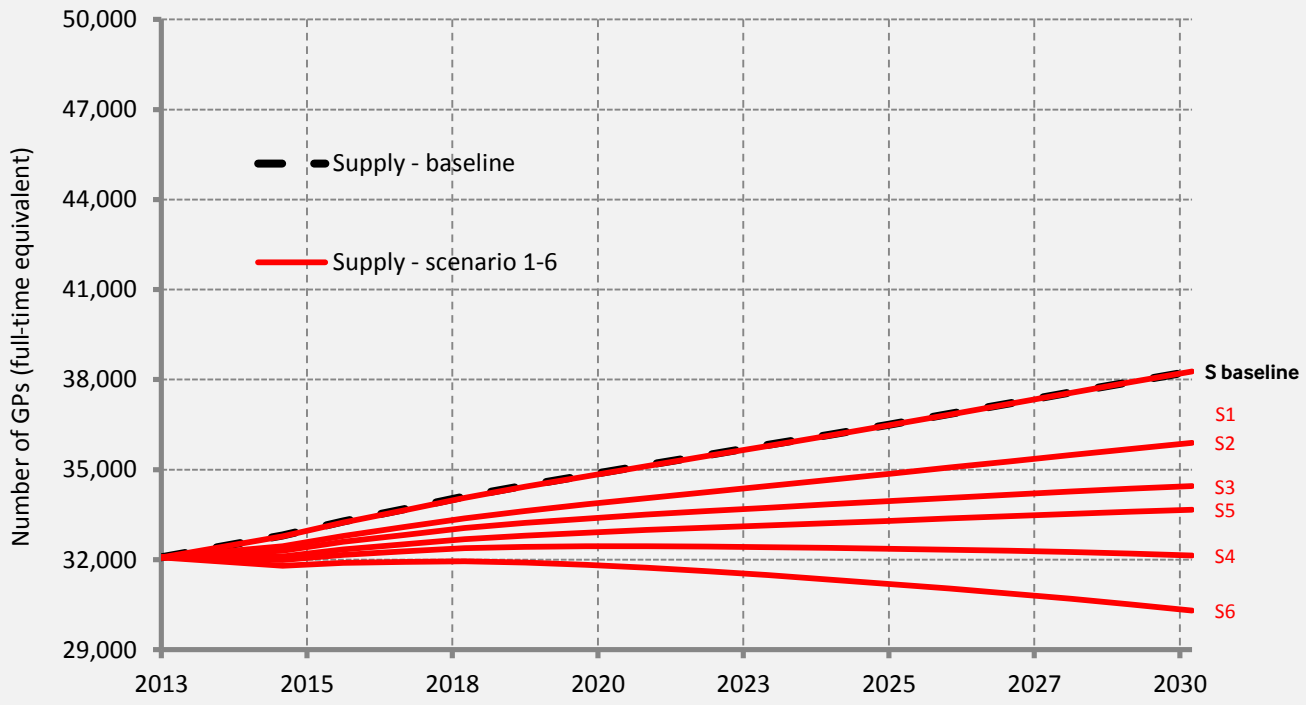
Figure 24: Projected growth in the GP workforce, England, 2013-2030*



Source: HSCIC (2014) and ONS (2013a) *excluding GP locums, registrars and retainers

8.2 Future GP workforce supply scenarios

Figure 25: Projected GP baseline supply and six supply scenarios



Source: CfWI medical workforce system dynamics model for England

As explained above, rather than attempt to predict the future, the CfWI has developed a scenario-based approach for in-depth workforce reviews that recognises the complexity of factors influencing demand and supply and the intrinsic uncertainty of the future.

Figure 25 shows the CfWI's projections of supply (red lines) for GPs for the six plausible future scenarios, compared with 'baseline' supply (black dashed grey line). A scenario summary table can be found in Section 7.

The variation between the six scenarios represents the judgment of the Delphi panel about the range of ways the future might plausibly unfold. The individual scenarios are not of particular interest; what matters more is the range of uncertainty.

Figure 25 **shows considerable uncertainty about future GP workforce supply** (as shown by the divergent red lines), with the six supply scenarios ranging from an increase of 19 per cent to a 6 per cent decline by 2030.

Five of the six supply forecasts (red lines) are below baseline supply, indicating that the Delphi panel anticipates lower participation rates, higher workforce attrition and (in some scenarios) earlier retirement than the CfWI's baseline modelling assumptions. More details on the Delphi panel assumptions by scenario can be found in Annex E.

Scenario 1 – a rosy future in which there is patient-driven workforce development and a perceived increase in the status and attractiveness of general practice as a career option in medicine – is the only scenario to show supply in line with rather than below the baseline. In this scenario, the Delphi panel considered that GPs would retire later and/or work more hours by 2030 than they do today.

The two scenarios with the lowest supply forecasts (further away from the baseline supply) indicate a future where there is either a 'meltdown in care' or a technology-reliant healthcare system, and thus the role of the GP becomes marginalised in those two scenarios.

Looked at as a whole, the six supply scenarios point to **considerable downside risk to the CfWI's supply projections**. That is, actual workforce supply is quite likely to be weaker than the baseline supply over the projection period.

9. Demand for GP services

9.1 Trends in activity and demand for GP services

Patient demand for general practice services has shown significant growth in recent years. General practice consultation rates rose from an average of 3.9 per patient per year in 1995-96 to 5.5 in 2008-09 (HSCIC, 2009), an annual growth rate of 2.5 per cent. However, most of the increase in consultations over that period was borne by practice nurses, with average GP consultation rates only increasing from 3.0 per patient per year in 1995-96 to 3.4 in 2008-09. As Figure 8 showed, this period saw a large increase in practice nurses, whose staffing levels peaked in 2006 and have only recently started to recover.

Figure 26 below shows that the main increase in demand for general practice services has come from a large increase in consultations for patients aged over 60. For instance, in the 85–89 age category there was a 94.5 per cent increase in the consultation rate per person from 1995-96 to 2008-09. The rise in the number of consultations may largely be explained by increasing long-term conditions and multi-morbidities.

There were a total of 300.4 million general practice consultations in 2008-09, of which 62 per cent were seen by a GP (HSCIC, 2009). If activity since 2009 activity had continued to rise at its historical average growth rate the CfWI estimates that there would have been **around 340 million general practice consultations in 2013** (or 1.3 million per weekday). This compares with 15 million planned, waiting list and emergency admissions to NHS hospitals in 2012-13 (HSCIC, 2013e).

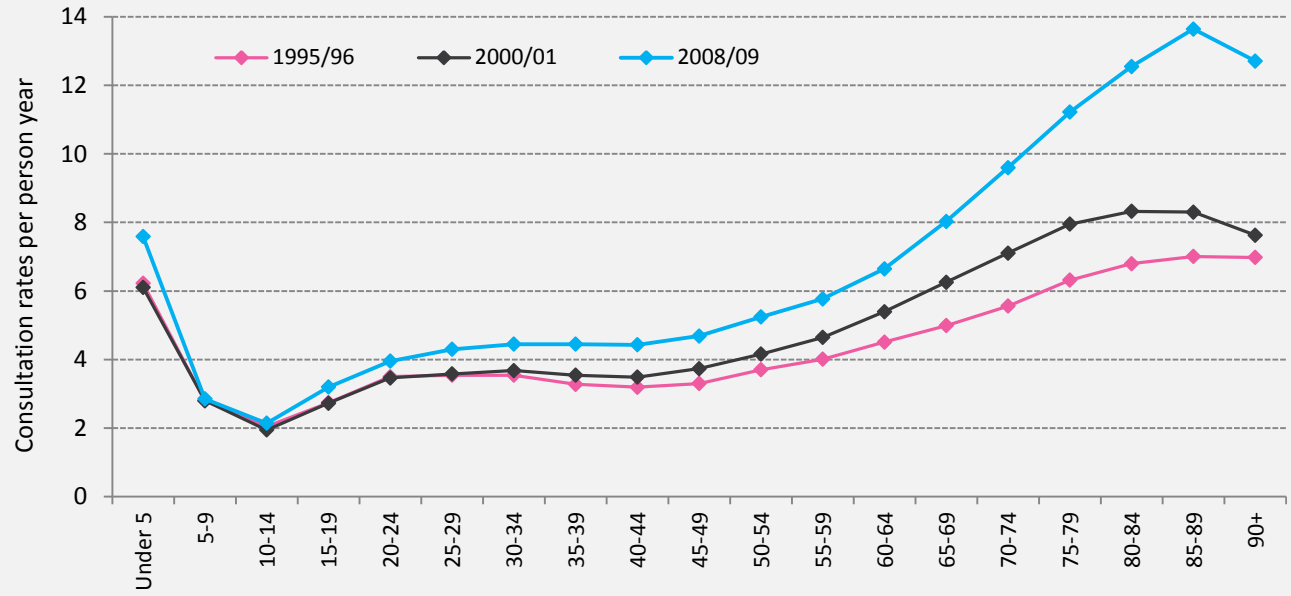
The previously mentioned ageing population and increased life expectancy also add to the GP workload. In addition to the ageing population there is a growing subset of very ill or very disabled people in the community who may, in population terms, be quite young but represent a real challenge to GP and community services. The 'success' of medical treatments generally means this population will continue to grow and exert a demand pressure.

According to the 2006-07 UK GP Workload Survey (HSCIC, 2007), the most recent version available, the average length of surgery consultations with GP partners (as opposed to all GPs) increased from 8.4 minutes in 1992-93 to 11.7 minutes in 2006-07. We were told by GPs that increasing case complexity had likely seen consultation length continue to increase since then.

A recent international survey of primary care physicians, conducted by the Commonwealth Fund (2012), found that of the 11 OECD countries surveyed, UK GPs were most likely to report being dissatisfied with the amount of time they had to spend per patient (54 per cent, compared with an average of 45 per cent).

The GP workforce will need to find ways to adapt if this trend of increasing workload pressure and case complexity continues. Alternative solutions, such as sharing the workload with other professions and encouraging more patient self-care through technology, were explored in the six scenarios generated by a group of stakeholders at the CfWI's workshop in November 2012. Following a Delphi panel exercise to quantify the scenarios, the CfWI project team was able to model future demand.

Figure 26: Trends in general practice consultation rates by age band and survey year



Source: HSCIC (2009)

9.2 Current unmet need

The CfWI's Delphi expert panel estimated that the median level of current needs that were met for GP services was 60 per cent. This implies that around 40 per cent of current needs for GP services are not currently being met.

This is a higher estimate of current unmet need than for other medical specialties or health professions that the CfWI has reviewed to date. However, there was considerable uncertainty among Delphi panel members.

9.3 Has the GP workload increased?

The latest substantive evidence on GP activity and workload is from an HSCIC report on consultation rates from 1995 to 2009 (HSCIC, 2009) and the 2006-07 UK GP Workload Survey (HSCIC, 2007). Both point to significant increases in GP workload.

Surveys since then by the RCGP (2012) and the BMA (2011) have provided supporting evidence for increases in workload. In the latest BMA survey (2011), 64 per cent of GPs described their in-hours workload as 'highly intense'. Of those respondents who had been working in general practice for the last five years, the vast majority (88 per cent) reported that the intensity of their in-hours workload had increased in the last five years.

The *Seventh National GP Worklife Survey* (Hann, et al. 2013) appears to corroborate these reports:

> *The 2012 survey reveals the lowest levels of job satisfaction amongst GPs since before the introduction of the new contract, the highest levels of stress since the start of the survey series, and a substantial increase over the last two years in the proportion of GPs intending to quit direct patient care within the next five years.*

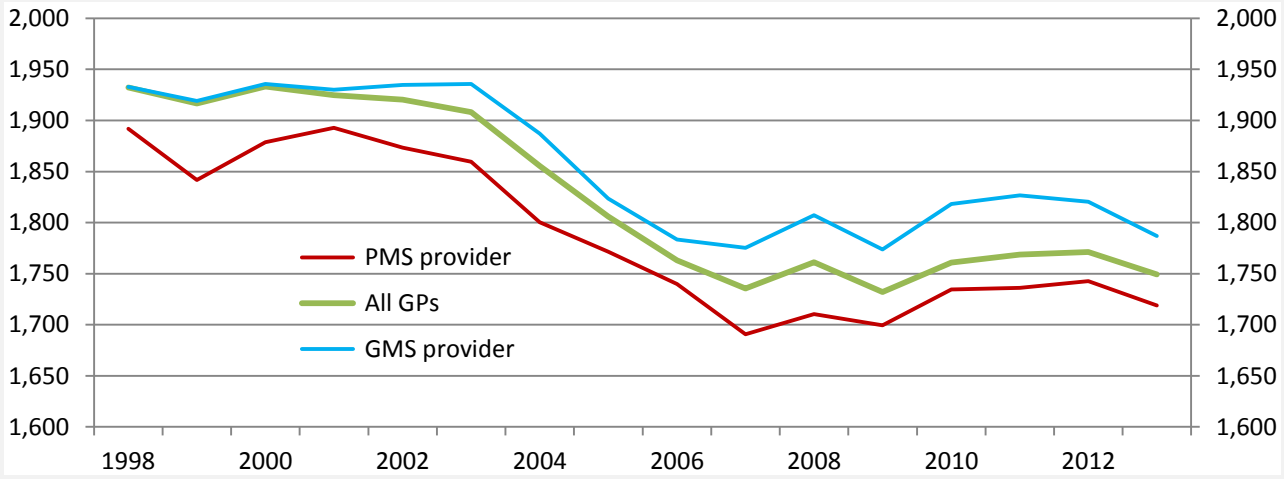
The vast majority of GPs (82 per cent) also said their overall workload had increased to some extent following the introduction of clinical commissioning groups (CCGs) in April 2013. Of those GPs with a formal role at CCG level, 60 per cent said their overall workload had 'increased a lot' and 19 per cent said that time spent on direct patient care had 'decreased a lot'. They spent a median of six hours per week on CCG-related duties, while practice commissioning leads spent a median of two hours.

Likewise the latest BMA quarterly tracker survey (2014) found that 42 per cent of GPs responding perceived their workload as 'generally manageable, too heavy at times', while 54 per cent considered it 'unmanageable or unsustainable'. Only around 1 per cent said they had a low workload.

Given these concerns, it is unfortunate that the last General Practice Workload Survey was conducted seven years ago (HSCIC, 2007), and that the latest data on GP activity and consultation rates in England only goes up to 2008-09 (HSCIC, 2009). **These are major gaps in a critical component of the evidence base**, which make it difficult to form definitive views on GP workload, activity or productivity.

Accordingly, the CfWI recommends that another workload survey be conducted in time for the next GP workforce review. This would capture the impact of the new GP contract, and provide a much-needed overview of the workload and skill mix of general practices in the UK.

Figure 27: Average patient list per GP (FTE), England



Source: HSCIC (2014)

In addition, the CfWI recommends that more frequent – preferably annual – **data collection on GP activity and consultation rates** be published. The HSCIC's General Practice Extraction Service (GPES) may be able to support this kind of work in future. However, the CfWI understands it has not yet been commissioned to carry out any such work.

Despite these data limitations, the CfWI's analysis of the available evidence on the demand for GP services points to a workforce under considerable strain and facing a heavier and more demanding workload in recent years.

The slowly growing GP workforce in recent years has been unable to keep up with increasing patient demand. The main drivers are:

- falling GP per capita ratios since 2009
- increasing consultation rates per patient, reflecting in part an ageing population
- falls in the size of the practice nurse workforce since its 2006 peak (until its pick-up in 2012)
- increasing non-clinical duties.

Average patient list size per GP fell between 2000 and 2007 but has since remained fairly steady (Figure 27).

In addition, both recent governments have emphasised the importance of transferring some patient care from hospitals into the community. If implemented, this may have significant implications for future GP workload. Likewise, the recent commitment to a named accountable clinician to coordinate care for vulnerable older people could add to existing GP workloads.

As a result of these factors, the CfWI considers that **current workforce levels are not sustainable, and without a significant increase in the GP workforce, numbers will be insufficient to meet expected patient demand.**

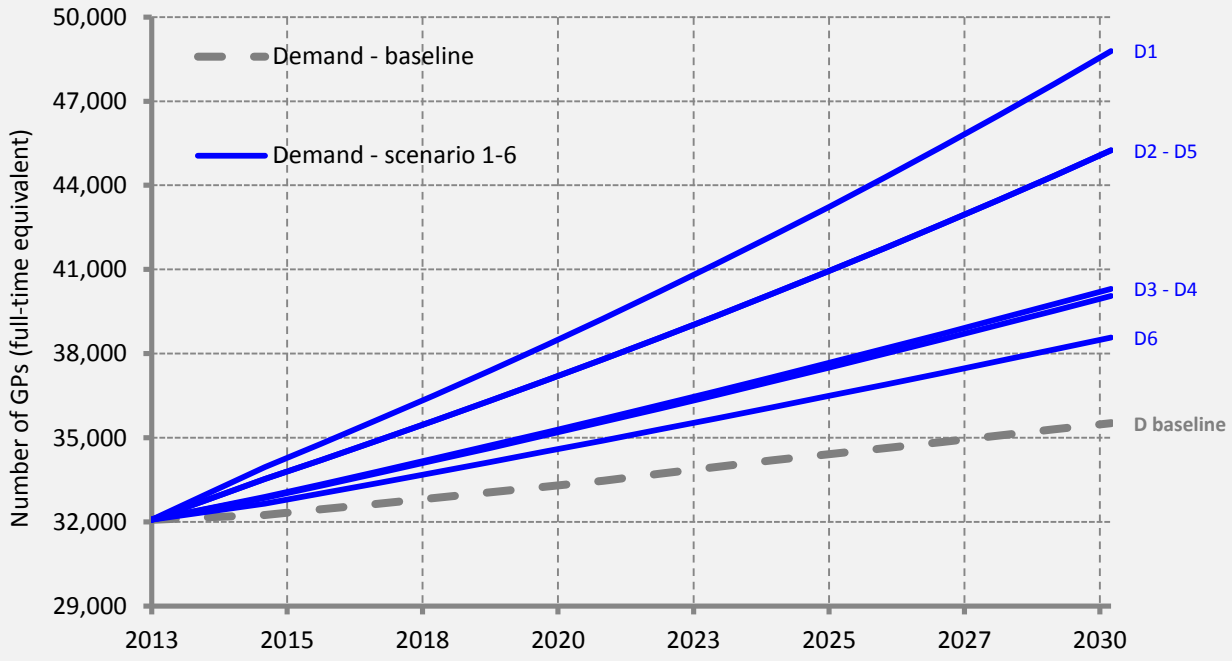
9.4 GP's role and case complexity

In recent years the role of GPs has increased significantly in breadth. Increasingly, GPs need to consider multiple agendas, balancing local and bigger-picture thinking (Patterson, 2013). Future GPs may assume more roles: social worker, public health advisor, commissioner and doctor. There is also the widespread perception that the job of a GP has become more complex due to:

- the increase in the volume and complexity of health and social care needs, as more people live for longer with long-term and often multiple conditions
- the growing subset of very ill and/or very disabled people in the community who may in population terms be quite young but represent a real challenge to GP and community services
- the shift of care out of the hospital and into the community, both as a means of bringing care – such as psychiatric care in the community – closer to patients and their families, but also as part of a drive to improve the cost-effectiveness of healthcare
- financial constraints as a result of the economic situation, resulting in a need to transform services to reduce costs while maintaining or increasing quality
- the challenge to engage patients more in their own care and to promote healthy lifestyles and behaviours.

9.5 Future GP workforce demand

Figure 28: Projected GP baseline demand and six demand scenarios



Source: CfWI medical workforce system dynamics model for England
Note: Projected demand lines incorporate a 0.4% productivity adjustment

As explained above, rather than attempt to predict the future, the CfWI has developed a scenario-based approach for in-depth workforce reviews that recognises the complexity of factors influencing demand and supply and the intrinsic uncertainty of the future.

Participants in the Delphi panel exercise were asked to quantify how many GPs would be needed to meet all healthcare demand by 2030 ('For those registered with a GP, what do you think would be the average change in NEED for healthcare by 2030?') and took into account a wide range of factors, not only demographic trends.

Figure 28 shows the CfWI's projections of demand (blue lines) for GPs for the six plausible future scenarios, compared with 'baseline' demand (grey dash line). A scenario summary table can be found in Section 7.

Baseline demand for GP services is projected to increase by 10.75 per cent (or 0.6 per cent per annum) on a FTE basis between 2013 and 2030, based on two drivers: population growth and the changing age and gender composition of the population, particularly the increase in older people (see Annex D for details). However, as the baseline does not include changes in patient expectations, the rise of multiple morbidities and case complexity, or the potential impact of greater prevalence of non-age-related long-term conditions, such as obesity or diabetes, it most likely **underestimates** future patient demand for GP services.

The six demand scenarios indicate considerable uncertainty about future patient demand (as indicated by the divergent blue lines) **and show a strong upward bias.** Across all six scenarios there is a sustained rise in demand for GPs, and all six demand scenarios considerably outstrip baseline demand, with demand expected

to increase by between 20 and 54 per cent by 2030. All six demand scenarios are projected to exceed the supply baseline by 2030 as well.

9.6 Adjustment for productivity

In the *Preliminary findings* (CfWI, 2013a) and its four roadshows, the CfWI consulted on what productivity growth assumption it should use for this review. There appeared to be general agreement that its proposal for a modest productivity growth assumption of around 0.4 per cent per annum was reasonable.

This is in line with ONS (2012c) estimates of average annual productivity growth between 1995 and 2010. The modelling of the CfWI's demand baseline and scenarios presented in this report incorporate that assumption for the period 2013-2030. However we also note that the Office for Budget Responsibility (2013) has revised its estimate for average productivity growth over the period 1979 to 2010 to 1.0 per cent per year since we published our *Preliminary findings* report. A higher average productivity growth rate across the projection period would help to narrow the demand-supply gap.

The potential impact of varying productivity growth assumptions is discussed in Section 12.4 below.

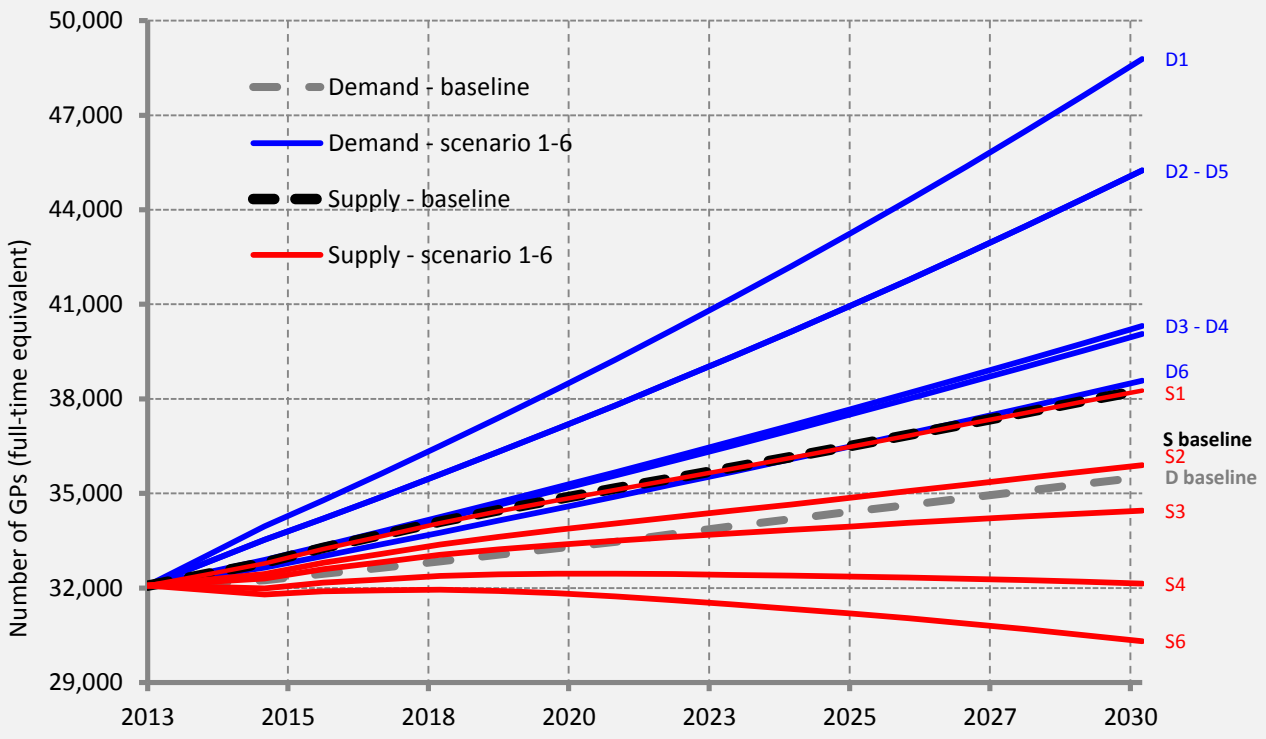
10. Demand and supply scenarios

10.1 Major demand-supply imbalance

Following a Delphi panel exercise to quantify the key demand and supply variables under each scenario (see Annexes D and F), the CfWI's scenario forecasts for both demand and supply are shown in Figure 29.

A stark picture emerges, with no overlap between the six demand (blue) and supply (red) scenarios. This points to both risks of significantly higher demand for GP services and lower workforce supply than the CfWI's baseline projections.

Figure 29: GP demand and supply projections for the six scenarios

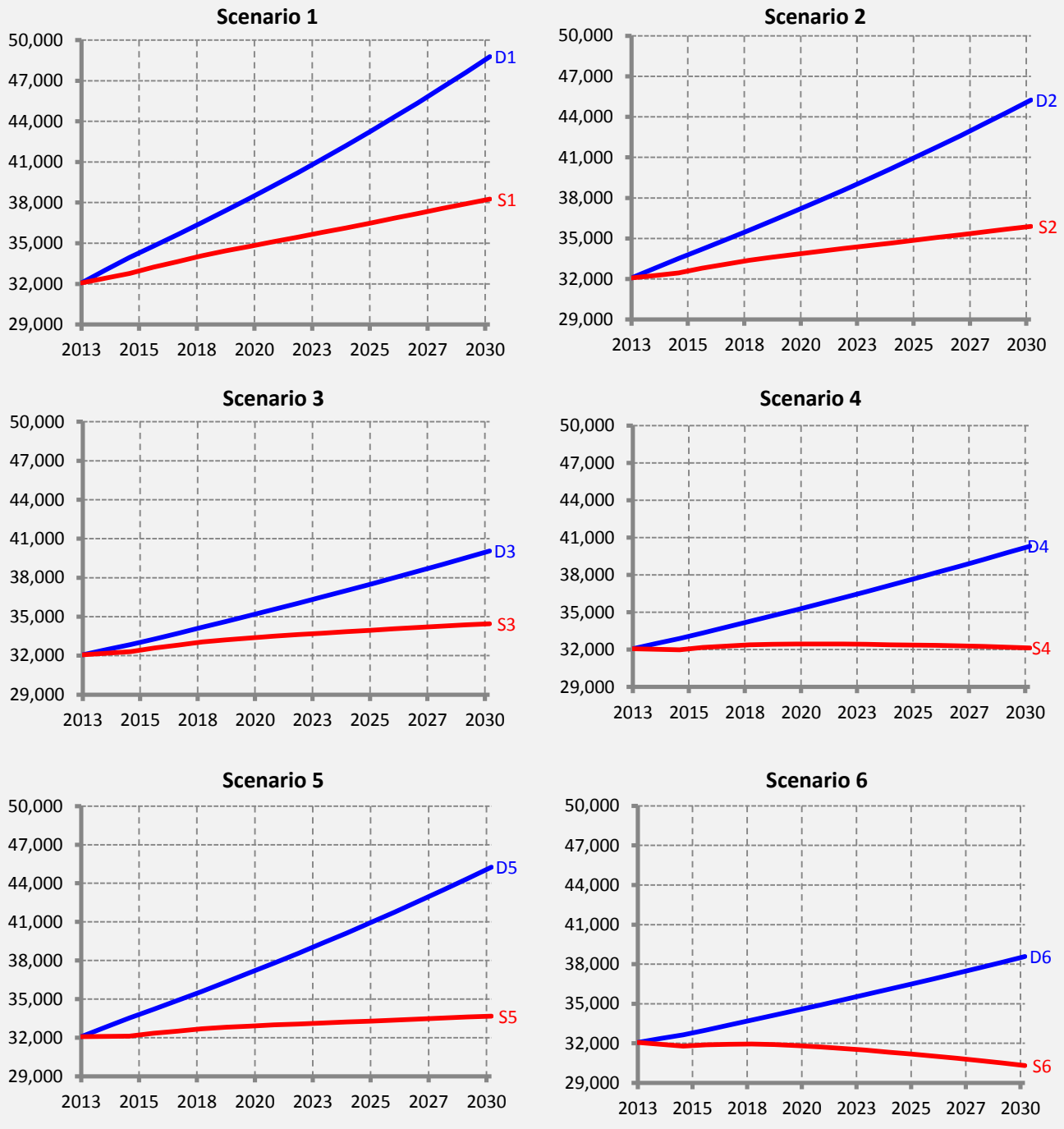


Source: CfWI medical workforce system dynamics model for England

As Figure 29 shows, for each of the six Delphi-informed scenarios, expected patient demand is well above projected workforce supply. All six scenarios show a large GP demand-supply gap emerging by 2020, and widening even further by 2030. That is, **significant workforce undersupply is projected under a wide range of plausible futures,** with none of the six scenarios either broadly in balance or pointing to oversupply.

This suggests there is very little prospect that GP supply will grow at a sufficient pace to meet expected demand over the projection period without a significant and sustained boost to the number of GP training posts. With the number of GPs per capita falling, all of the CfWI's scenarios point to an undersupply with patient demand for general practice services likely to continue to outstrip projected supply, **there is a clear risk of a major demand-supply imbalance emerging by 2020 unless there is a significant, sustained and immediate boost to GP training.**

Figure 30: GP demand and supply projections to 2030 for each scenario (full-time equvalent)



Source: CfWI medical workforce system dynamics model for England

10.2 Other measures

Three policy options to increase GP supply through additional training posts are discussed in Section 11. A range of other measures to improve supply or curb demand may also be needed, including the following.

- Measures to make general practice a **more appealing career choice** for medical students could include the following.

    1. Promote general practice throughout the education system as an equally rewarding and distinctive career choice to hospital-based specialties.
    2. Incentivise undergraduate training providers to design programmes to meet the future general practice needs, which need to be aligned with undergraduate funding.
    3. Set up a career structure in general practice that offers choice and flexibility.
    4. Create local initiatives to attract GPs into rural and deprived areas (though this may prove a short-term fix).
    5. Use proactive methods to promote GP job opportunities through careers advice and practical experience incorporated into the curriculum in medical school programmes.
    6. Develop dedicated marketing to promote general practice in England and encourage more positive media coverage of general practice. We understand that the GP Task Force is examining this issue.

- Measures to **encourage returners and improve retention** could involve the following.

    1. Setting up re-introduction and refresher schemes for doctors who have been out of clinical general practice between two and five years: A flexible approach should be adopted, depending on previous experience, experience in other specialties or roles related to medicine, and where the career participation of these doctors is considered a 'return on investment'.
    2. GP retainer schemes, designed to assist doctors who, during a specific time in their careers, can only undertake a small amount of paid professional work (e.g. parents of young children or those caring for older relatives): These schemes enable them to keep in touch with general practice, retain their skills and sustain their careers, with a view to returning to NHS general practice in the future. The schemes combine a service commitment with an educational component and offer an option to undertake locum work.

- Arrangements that **improve the flexibility of training pathways** and seek to attract more to GP training, for example:
    1. making it easier for trainees or established specialists in other medical specialties to switch to general practice[14]
    2. encouraging non-GP medical trainees to move into GP training.

- Steps to **boost the wider general practice clinical workforce** could include:

    1. increasing the supply of practice nurses by increasing the proportion of general practice in undergraduate nursing, and in the curricula for allied health professionals (AHPs) such as paramedics, physiotherapists and podiatrists
    2. increasing the commissions for physician associate (PA) training.

[14] The CfWI notes this has cost implications, due to 'protected salary' arrangements, less time needed in hospital posts and more time needed in general practice training in order to switch.

11. Policy options to boost supply

The preceding analysis shows that significant workforce undersupply is likely under both the baseline supply and all six supply scenarios, posing a clear risk of major demand-supply imbalance. The main policy option to prevent this is to increase the intake of new GPs through additional postgraduate training posts.

This section presents three possible policy options the CfWI has modelled to boost training posts over the medium term (by 2020) or long term (by 2030) to bring supply in line with expected future patient demand, and discusses their respective merits. The results are summarised in Table 4.

Table 4: Summary of options to increase supply*

Description of policy	Annual ST1 posts	Boost to GP supply
Policy option A – increase the baseline supply to match demand scenario midpoint by 2020	**3,280** (+20%)	Medium
Policy option B – increase the midpoint of supply scenarios to match demand midpoint by 2020	**4,145** (+51%)	High
Policy option C – increase the midpoint of supply scenarios to match demand midpoint by 2030	**3,905** (+42%)	Medium/ high

Source: CfWI *See Annex F for modelling assumptions

11.1 Policy option A – Baseline in line with demand scenarios midpoint by 2020

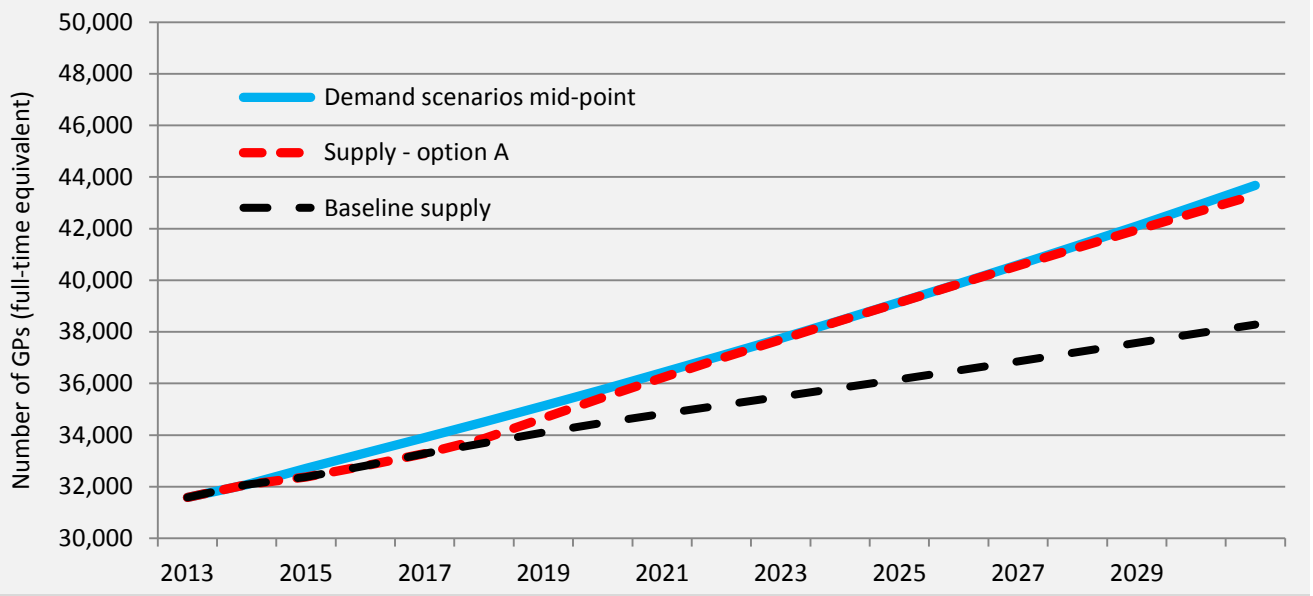
The first option was to model the increase in GP training posts that would be needed to bring baseline supply in line with the midpoint of the CfWI's six demand scenarios by 2020. The CfWI's modelling indicates that policy option A would require **a 20 per cent increase in GP training posts, to 3,280 by 2015**, and then it would need to be maintained at that higher level.

This equates to an increase of 536 posts by 2015-16, compared with the 2,744 ST1 accepted offers in 2013-14. If split evenly over the next two years, that would mean an increase of around 270 posts per annum.

As Figure 31 shows, policy option A would see **demand and supply remain broadly in balance** for the remainder of the projection period to 2030.

The main potential drawback of option A is that **it may not, by itself, be sufficient** to ensure that workforce supply balances expected demand. Figure 30 shows that five of the six supply scenarios are below the baseline supply projection. Hence there is a significant risk that supply could come in lower than the new higher baseline under option A, unless the 20 per cent increase is accompanied by other measures to boost GP supply.

Figure 31: Policy option A – impact of an increase in GP training to boost baseline supply to match the mid-point of the demand scenarios by 2020



Source: CfWI medical workforce system dynamics model for England * see Table F1 in Annex F

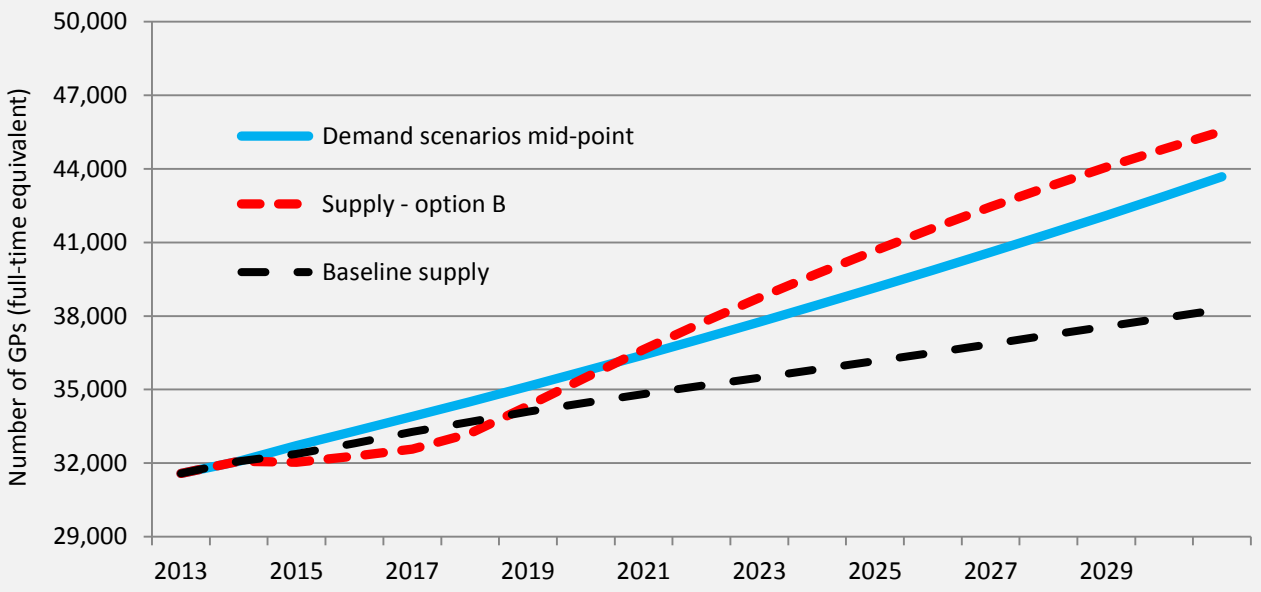
11.2 Policy option B – Balance demand and supply scenario midpoints by 2020

The CfWI also modelled the increase in GP training that would be necessary to bring the midpoint of the supply scenarios up in line with the midpoint of the demand scenarios by 2020. In other words, this policy option would see the six demand and supply scenarios overlap.

Achieving policy option B would require a larger short-term boost to training. The CfWI's modelling indicates that this policy option would require **a 51 per cent increase in GP training posts, to around 4,145, by 2015**. This equates to an increase of 1,401 posts by 2015-16, compared with the 2,744 ST1 accepted offers in 2013-14. If split evenly over the next two years, that would mean an increase of around 700 posts per annum.

As Figure 30 shows, however, this option is projected to lead to **oversupply in the subsequent decade** to 2030, so it would require GP training numbers to be pared back substantially after their initial boost. This may prove a difficult (and expensive) policy to implement successfully.

Figure 32: Policy option B – impact of an increase in GP training to boost the mid-point of the supply scenarios to match the mid-point of the demand scenarios by 2020*



Source: CfWI medical workforce system dynamics model for England * see Table F1 in Annex F

11.3 Policy option C – Balance demand and supply scenario midpoints by 2030

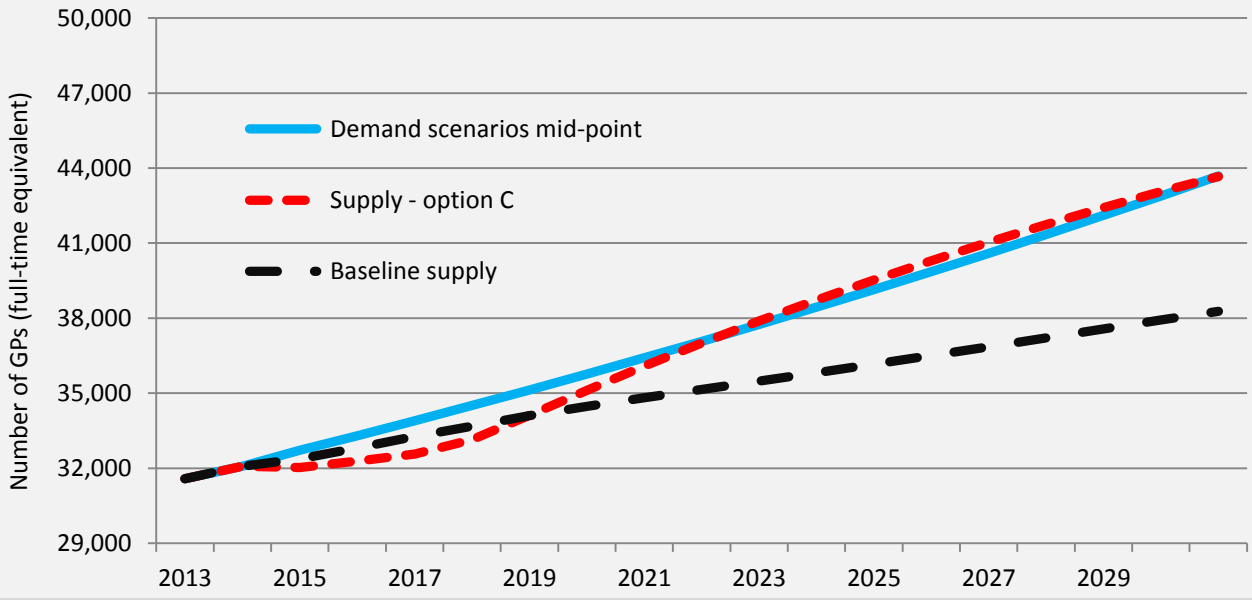
This policy is a variant of Policy B. Rather than seeking to bring the midpoint of the six supply scenarios to match the midpoint of the demand scenarios by 2020, it aims to bring them into balance by 2030.

As there is a longer period of time over which to boost supply, a smaller increase in annual GP training posts is required. The CfWI's modelling indicates that **policy option C would require a 42 per cent increase in GP training, to around 3,905 posts per annum.** The CfWI has assumed that this higher level of training, once reached, would be maintained through the projection period to 2030.

Policy C equates to a total increase of around 1,161 posts compared with 2013-14 accepted offers, or around 580 per annum over the next two years of recruitment rounds to 2015-16. Figure 32 shows the change in the midpoint of the CfWI's supply scenarios if the number of GP training posts increases from 2,699 (average accepted offers for the last five years) to 3,905 by 2015-16 and is then maintained at that higher level.

Option C would also bring demand and supply into balance by 2022, only a little later than option A, and without creating significant oversupply in the following period. Hence the CfWI considers this preferable to option B.

Figure 33: Policy option C – Impact of an increase in GP training to boost the mid-point of the supply scenarios to match the mid-point of the demand scenarios by 2030*



Source: CfWI medical workforce system dynamics model for England * see Table F1 in Annex F

11.4 Summing up

The CfWI's assessment is that a significant, sustained and immediate boost to GP training numbers is necessary to mitigate the risk of a major demand-supply imbalance emerging by 2020. The increase in GP training posts needed to balance demand and supply over the medium term is likely to fall **within a 20 to 42 per cent range**. However the CfWI doubts the practicality of options B and C as they would require either very substantial additional funding or a large offsetting reduction in non-GP postgraduate medical training posts.

Policy option A would be more achievable and affordable than the other two options. However, given the significant lead-in time in training new GPs, it would not be able to address short-term demand pressures and may also be insufficient – on its own – to fully meet expected medium-term demand for GP services.

An important caveat to all three policy options is that, as modelled, they do not take into account any other actions which might boost effective workforce supply or better manage patient demand. If the boost to GP training posts is accompanied by other substantive measures to boost the effective workforce supply, such as those the CfWI understands are being examined by the GP Task Force, it would be appropriate for the increase in GP training posts to be **towards the lower end of the forecast range: around 20 per cent.**

Some progress has already been made. The HEE (2013b) *Workforce plan for England* proposes an increase of 222 GP training commissions in 2014-15. If achieved, this would see GP training places increase by 8 per cent.

The increase would be most effective if it were phased in over the next two years, boosting GP training posts to around 3,280 per annum by 2015-16. Should the proposed increase in GP training be phased in over a longer period than two years, it would take longer for demand and supply to reach balance and a larger increase may be warranted. Likewise, if the proposed increase in GP training is not accompanied by other measures, a larger increase will be needed to mitigate the risk of demand-supply imbalance.

12. Sensitivity analysis

It is important to consider the potential risk with any plan. This section uses the CfWI medical system dynamics model to consider the impact of several possible supply or demand shocks to the GP workforce projections shown above.

The discussion below in no way constitutes a policy recommendation, nor a forecast by the CfWI. It is simply an exploration of possible risks and their workforce impacts.

Table 5: Sensitivity analysis shocks modelled*

Description	Type	Impact
GP training extended by one year (phased in from 2015)	Policy option	Medium
Later GP retirement age (from 2013 to 2030)	Supply shock	Low
Early GP retirements (five years from 2013 to 2017)	Supply shock	Very low
Increased GP emigration (from 2013 to 2030)	Supply shock	High
Higher productivity growth (from 2013 to 2030)	Demand shock	Medium/ high
Zero productivity growth (from 2013 to 2030)	Demand shock	Medium/ high

Source: CfWI modelling *See Annex F for modelling assumptions

12.1 Extended GP training

An extension to the GP training term from three to four years – accepted in principle by the Department of Health – could potentially exacerbate short-term workforce supply pressures. The CfWI's sensitivity analysis shows the potential impact of a phased introduction of extended GP training.

Figure 34 shows the change in supply of GPs if the length of training is extended from three to four years, with the introduction of it phased over two years. It is assumed that half of new GP trainees start four-year training in 2015-16, and from 2016-17 onwards all trainees start a four-year course. The CfWI also assumes that less-than-full-time trainees now take an average seven years rather than five, and that maternity leave still delays many trainees. The CfWI also assumes that delays due to exam failure remain the same in four-year training because exams will act as gateway assessments to the Specialty Training 4 (ST4) year.

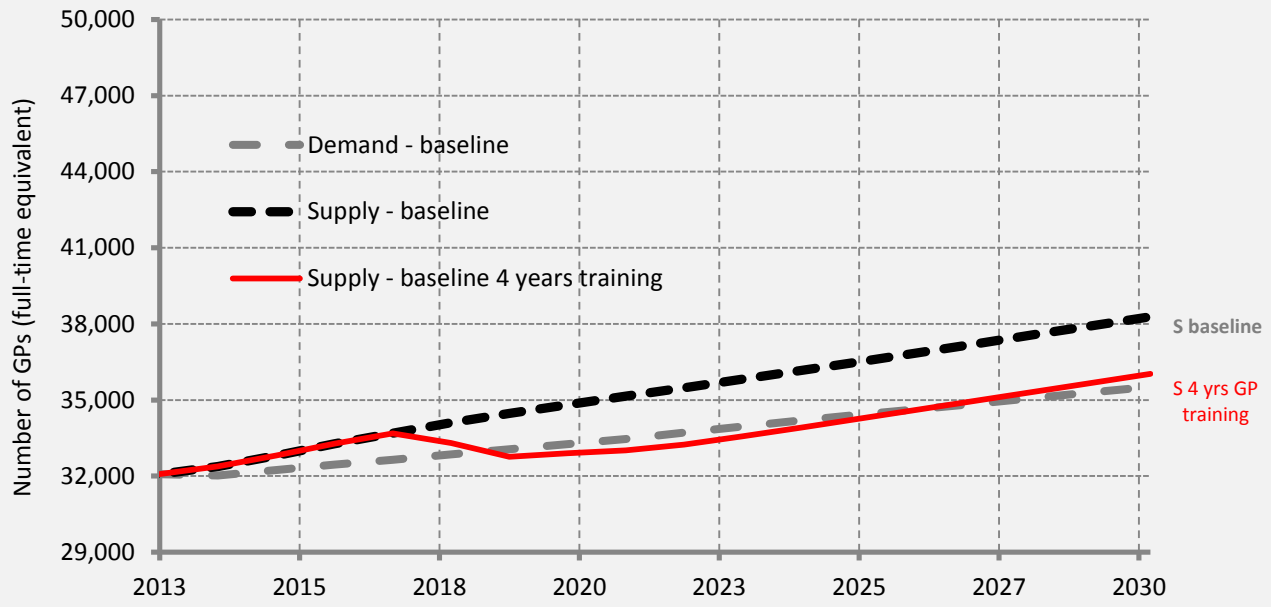
The impact of the introduction of four-year GP training takes three years to show in the workforce numbers. The staggered introduction is forecast to lead to one year of zero workforce growth and a possible slight

reduction in workforce size after four years. The CfWI's model estimates that, following the introduction of four-year training, the supply baseline will be about 5 per cent (1,910 FTE) lower in 2020 and about 6 per cent (2,250 FTE) lower in 2030.

The risk of reduction in workforce supply could be mitigated in the following ways:

- The clinical service contribution of ST4 GPs in training placements is likely to be substantial, and could be greater than that of salaried GPs in the early years of practice. [15]
- There are opportunities to place ST4 trainees in areas where workforce supply is most constrained, such as remote rural and deprived urban communities (see Figure 18).
- Phased implementation of extended GP training from a defined ST1 intake date would mean a proportion of the usual cohort would gain CCT in the year the first trainees move from ST3 to ST4.
- A locum/sessional newly trained GP talent pool could be created.
- ST2 entry points to general practice training could be created to offset the output drop and encourage GP applicants who have come from other specialties.

Figure 34: Possible supply impact of GP training being extended from 3 to 4 years*



Source: CfWI medical workforce system dynamics model for England * see Table F2 of Annex F

But the two models have quite different training and workforce implications. The GP-led integrated model should be more efficient than existing approaches, but over time would still require considerable expansion of the GP workforce. The alternative model would require more practice nurses and other primary care workers, and better collaboration across district and community nursing.

[15] The standard BMA contract for a GP trainee that would apply to an ST4 trainee is for a 10-session week, of which seven sessions are clinical, while the typical first post for a GP on gaining a Certificate of Completion of Training (CCT) is a salaried post. Figures from medical accountants (GP online, 2009) show salaried GPs work an average of 5.3 clinical sessions a week.

The new GP commissioning structure presents GPs with an opportunity to develop a more innovative and coordinated approach that delivers high-quality, safe patient care and value for money. Any new model of shared care will need to be developed with other health and social care providers, with clear roles and responsibilities for general practice to ensure that care for patients is well coordinated.

Figure 39, based on extrapolation of the 2012 figures, shows that larger GP practices with more than 10 GP partners will be less reliant on GPs, and more reliant on other healthcare professionals such as healthcare assistants, other direct patient carers, physician associates and advance nurse practitioners. In comparison, the broader multidisciplinary primary care model will make greater use of physician associates and advanced nurse practitioners, and therefore reduce the percentage of practice nurses and GPs in service delivery.

12.2 GP retirement age options

The CfWI's Delphi panel exercise for most scenarios forecast a reduction in the average retirement age (see Annex E). As this is contrary to both Government pension policy and general workforce trends towards later retirement, it is possible that the Delphi panel's assumptions may prove overly pessimistic.

Impact of later GP retirement age: The Government has proposed a phased increase in the state pension age (SPA) (DWP, 2013). The CfWI tested the effect this may have if GP retirement ages were to change in line with the proposed changes to SPA. Figure 35 shows the supply of GPs if the following takes place.

- There is a staggered increase in the average retirement age of women GPs by two years to match that of male GPs by 2017.
- There is a one-year increase in average GP retirement age by 2019.
- There is another one-year increase in 2027.

The CfWI is not assuming that GPs retire at the state pension age. It is instead applying the average *increase* in the SPA between now and 2030 to the current average GP retirement ages in its model. This would increase the assumed average retirement age of male GPs from 60 now to 62 by 2030, and for women GPs from 58 to 62.

The effect of GPs retiring several years later than at present **increases GP supply by about 3.5 per cent** or around 1,340 FTE (1,500 headcount) by 2030 compared with the supply baseline.

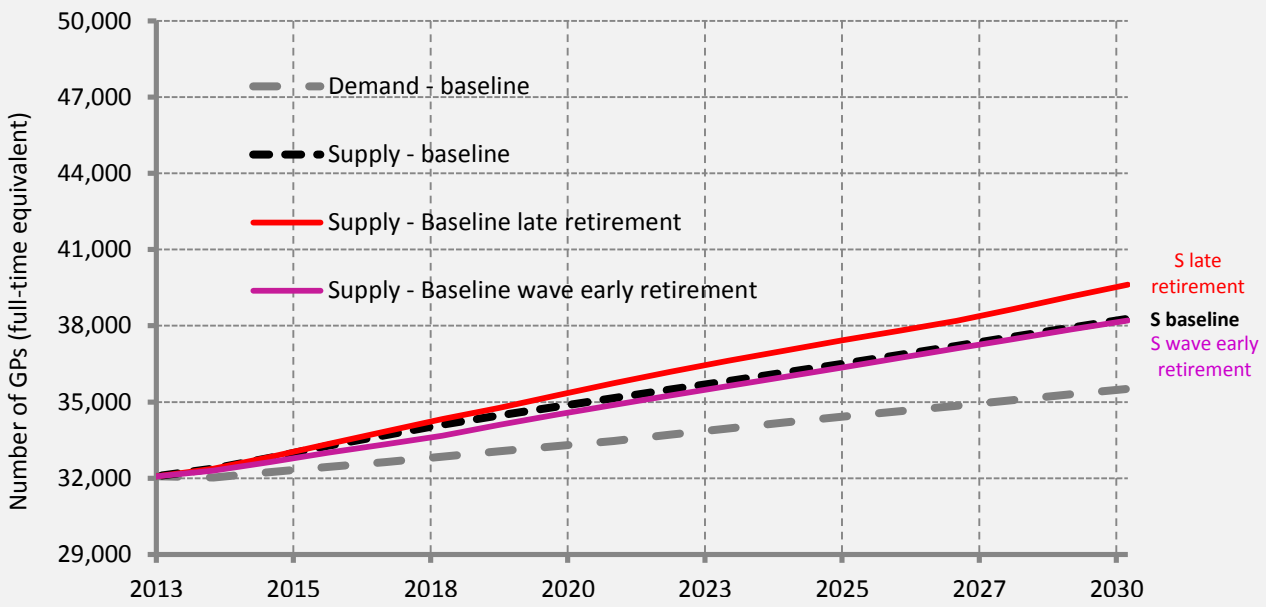
Impact of a wave of early GP retirements: The CfWI also modelled the impact of a possible wave of early GP retirements over the next five years due to pension changes, the introduction of revalidation and the new GP contract; especially among GPs who otherwise would have retired after 60. Comments by a number of GPs at the CfWI's roadshows suggest this is a possibility. This appears to be supported by the latest *National GP Worklife Survey* (Hann, et al. 2013):

> *The proportion of GPs expecting to quit direct patient care in the next five years had increased from 6.4% in 2010 to 8.9% in 2012 amongst GPs under 50 years-old and from 41.7% in 2010 to 54.1% in 2012 amongst GPs aged 50 years and over.*

For modelling purposes, the CfWI has reduced the assumed average retirement age of male GPs from 60 to 59, and for women GPs from 58 to 57, between 2013 and 2017. In 2018 the retirement assumptions revert back to the baseline.

The effect of GPs working fewer years than at present due to a wave of early retirement is quite modest – a 1 per cent reduction (about 430 FTE) at its peak in 2018, when the retirement assumptions revert back to the baseline and the supply starts to follow the baseline supply trend until 2030.

Figure 35: The potential supply impact of earlier or later GP retirement on workforce supply*



Source: CfWI medical workforce system dynamics model for England; DWP (2013)
* Table F3 and F4 of Annex F

12.3 Increased emigration

A number of GPs have told the CfWI they expect there to be greater migration flows in the future, and in particular more GPs leaving the UK permanently to work abroad. The two factors most often cited were a perception of better opportunities and working conditions overseas, and dissatisfaction with work-life balance as a GP working in England. Although we do not know if these fears may prove warranted, a recent comparison of the 1995 and 2006 BMA junior doctor cohort (BMA, 2013) found an increase in numbers intending to emigrate:

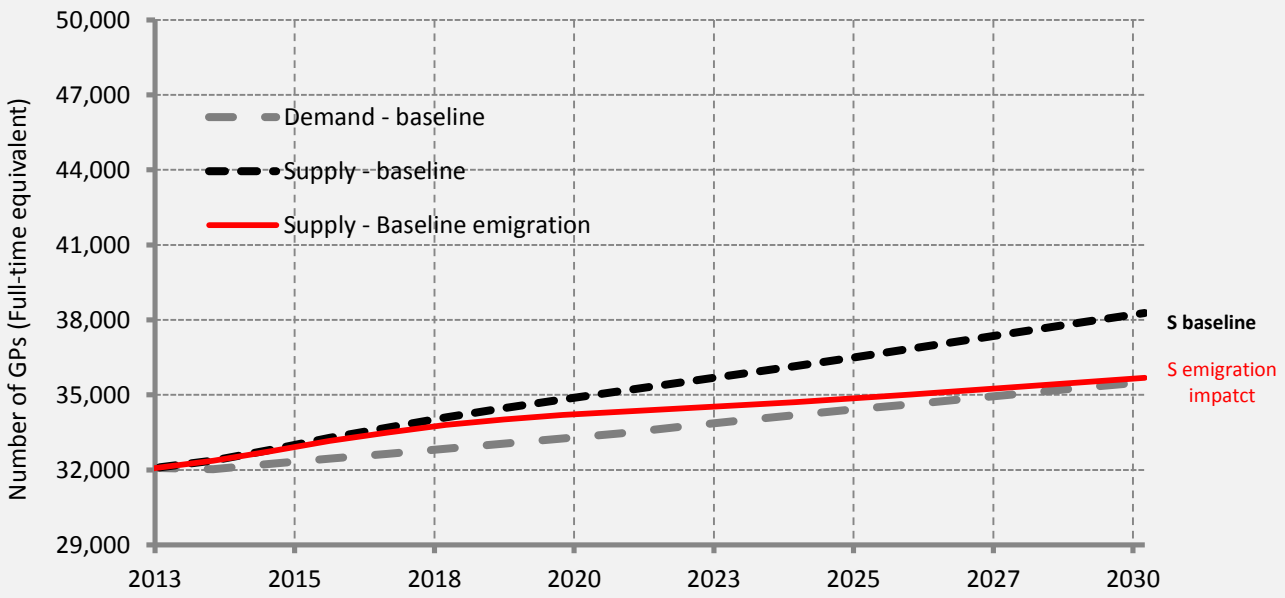
> *When making other comparisons with the current 2006 cohort and the previous 1995 cohort, one of the key findings is that more doctors now intend to work overseas permanently at some point in the future. Although this difference is fairly small (8 per cent compared to 5 per cent), this could have potentially large implications for the medical workforce if this intention comes to fruition, once applied to the entire cohort of junior doctors in training.*

Accordingly, the CfWI has modelled the likely impact of baseline workforce supply, should there be a gradual increase over the projection period in the proportion of GPs choosing to emigrate permanently. The CfWI assumes that the workforce attrition rate for GPs aged up to 35 increases by 0.25 percentage points per annum between 2013 and 2020, and is then held at that higher rate through to 2030. For GPs aged 36 to 45, the CfWI assumes a lower annual increase in workforce attrition of 0.1 percentage points between 2013 and 2020, which is maintained to 2030.

The results can be seen in Figure 36. Although initially quite modest, by around 2020 the reduction in GP supply is almost 1,000 (FTE basis) and reaches around 2,600 by 2030 – **a 7 per cent reduction from the CfWI's baseline projection**. This suggests that in addition to policies aimed at re-joiners or retaining existing GPs, factors likely to discourage more GPs in England from emigrating permanently should be identified and, where feasible, addressed.

Dissatisfaction with work-life balance appears to be a key factor, with nine in 10 cohort doctors identifying it as a principal reason why doctors leave the NHS to work overseas (BMA, 2013). The BMA authors note that 'as this is clearly an important finding, further investigation is required'. The CfWI would support this assertion.

Figure 36: The potential supply impact of sustained GP net emigration on GP supply*



Source: CfWI medical workforce system dynamics model for England. *see Table F5 of Annex F

12.4 Productivity growth scenarios

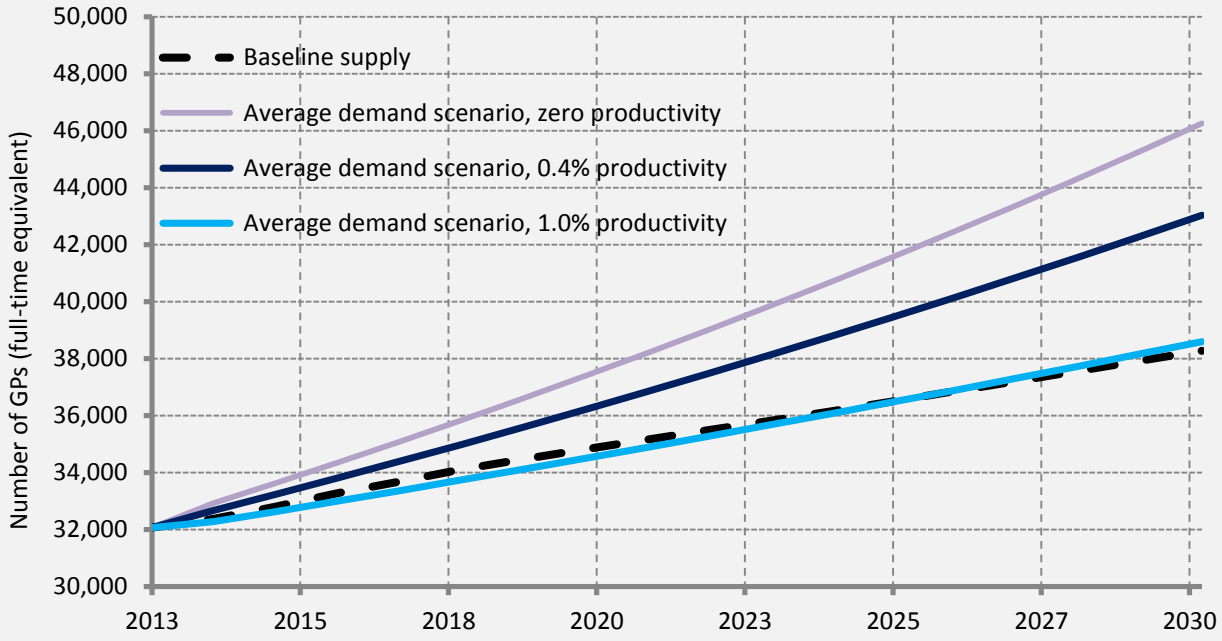
Although the lack of recent activity data means that no direct measures of GP productivity are possible, it is quite likely that the CfWI's 0.4 per cent productivity growth modelling assumption underestimates recent GP productivity growth and the potential for future efficiency improvements.

Figure 37 shows the impact on an **average** of the six demand scenarios of three differing productivity growth assumptions:

- zero GP productivity growth over the projection period
- the CfWI's model assumption of 0.4 per cent productivity growth per annum, based on ONS estimates of average annual growth for healthcare in the period 1995 to 2010 (ONS, 2012c)
- a higher productivity growth rate of 1.0 per cent per annum, based on revised Office for Budget Responsibility estimates of average annual growth from 1979 to 2010 (OBR, 2013).

Our baseline projection for workforce supply is also shown.

Figure 37: The impact of varying productivity growth assumptions on demand scenarios*



Source: CfWI estimates, based on ONS (2012c) and OBR (2013)
Note: The 'average demand scenario' is the average of the six demand scenarios outlined in Section 9

These projections show the profound impact that efficiency and productivity improvements can have on the ability to meet future patient demand for GP services. Even a relatively modest 1 per cent per annum improvement in productivity would bring the average of our six demand scenarios in line with our baseline supply projection (although it would not be enough to equal the average of our six demand supply scenarios, which is considerably lower).

Unfortunately there are no recent activity estimates that would enable the CfWI, the ONS or OBR accurately to measure recent trends in GP productivity. This is a key gap in the evidence base which needs to be filled.

13. The GP and primary care of the future

13.1 More of the same?

The prevalence of long-term conditions, combined with rising patient expectations and lifestyle factors such as diet, exercise, tobacco and alcohol use, means the way primary care is delivered is likely to change significantly in the future.

As health and social care needs grow in both volume and complexity, and health budgets remain constrained, pressure on the current fragmented system will continue to build. There is much talk of a 'patient-centred' approach, multidisciplinary teams and greater collaboration between primary, secondary and social care. As the Royal College of General Practitioners attests in *The 2022 GP* (RDGP, 2013):

> *We are moving instead towards a twenty-first century model of integrated care where patients and professionals work closely together in flexible teams, formed around the needs of the patient and not driven by professional convenience or historic location.*

This is similar language to NHS England's emerging narrative on 'person-centred coordinated care' (NHS England, 2013a), and many other recent statements from official bodies, colleges, professional associations, think tanks and patient organisations.

Hence simply increasing GP numbers – though vital – is unlikely to be enough on its own to ensure better patient access and more consistent quality of primary care services over the long term. As NHS North West London (2012) found when it surveyed primary care professionals, there is a 'wide belief that more of the same and just working harder cannot be the answer'. The CfWI expects that primary care commissioners will seek better-coordinated patient care through more joined-up and collaborative primary care delivery and more effective use of skill mix in multidisciplinary teams.

13.2 Dimensions of change

The British model of contracting GP services is now over a century old. General practice has come a long way since then through the introduction of a formal training system, the expansion of the GP workforce, advances in medical treatment, and social and demographic changes. However, the basic model remains of a skilled generalist doctor delivering good-quality primary care services, prescribing and referring to secondary care.

The CfWI expects the future model of general practice to share many features with today's model. However, key dimensions of change include:

- changes in the role of GPs
- changes in how general practices are organised
- changes to GPs' role in the wider primary care or community-based healthcare system.

The expanding role of the GP over the past decade was discussed in Section 9.3, with GPs having to consider multiple agendas and take on more complex cases, while facing increasing demands and competing tensions in the role. The CfWI expects this to continue over the next two decades, with GPs spending more time seeing complex patients, 'able to routinely structure care around multi-morbidity as well as individual conditions' (RCGP, 2013).

The CfWI also expects greater specialisation and diversity of roles among GPs, with some wishing to lead service planning, commissioning or quality improvement while others prefer to extend their clinical, public health, academic or education and training roles. Greater flexibility in medical education and training could also see more GPs acquiring formal additional credentials to be added to their registration.

As noted in Section 3.5, **the way in which GP practices are organised is changing**. The proportion of GPs working on a salaried or locum basis is rising; the proportion of GP partnerships, while still a clear majority, is gradually declining. Practices are getting bigger: single-handed practices are in steady decline and very large practices (those with 10 or more partners) are appearing. The CfWI expects this trend to continue. By 2030 more than half of patients living in urban areas could have their care provided by a very large practice, a federation of GPs or a primary care network. Social enterprises and private companies may also play a larger role in the delivery of primary care services in the future.

However they are organised, **the emergence of larger general practices and networks should facilitate improved patient access** via multiple sites, extended hours, greater use of email and telephone consultations, and a broader range of health services. This trend also has the potential to bring isolated practices within more formal accountability structures, encourage greater collaboration between practices, and help offset cost pressures through economies of scale, better IT and administrative functions. Larger practices, and federations and networks of practices, will also facilitate greater GP role diversity and extended responsibilities.

The CfWI expects the growing number of very large GP practices (including federations of practices) to be able to coordinate a broader range of primary care services across multiple sites and extended hours. This view is consistent with the recent NHS England (2014) call for 'a step change in partnership working':

> *In order to support delivery of our ambitions, we believe that general practice will need to operate at greater scale and in greater collaboration with other providers and professionals and with patients, carers and local communities.*

13.3 Future primary care models

How might the GPs' role in the wider primary care (or community-based) healthcare system change? There are two main alternatives:

- The Royal College of General Practitioners' model is to 'develop and implement more generalist-led integrated services in the community' (RCGP, 2013). Under this model, GPs would continue to play the generalist role but also spend more time overseeing the delivery of patient care by multidisciplinary teams. This can be seen as a natural evolution of existing trends.

- A more radical departure would involve managing primary demand and cost pressures through a broader, less GP-reliant skill mix. GPs would still deliver much of the service, but would spend more time dealing with patients with complex needs and long-term conditions, coordinating care pathways and supporting greater patient self-management. Practice nurses and nurse practitioners would play a greater service role, freeing up GPs' time. District and community nurses, health visitors, pharmacists, optometrists and physiotherapists may also make a broader contribution to primary care delivery than they currently do. This model may also use a nurse-led triage system or other gateway to manage patient demand.

Under either model there would be more GPs with a special interest, and more community-based specialists.

Table 6: Three GP/primary care models

Key features of each model	Traditional GP practice	Large GP-led integrated model	Multi-disciplinary primary care
GP partners	<10	> 10	> 10
Leadership team (e.g. directors)	No	Yes	Yes
GP-led care	Yes	Yes	In some cases
Number of sites	1 or 2	Several/many	Several/many
Range of services	Limited	Several	Several
Multi-channel working	Limited	More potential	More potential
Skill mix	Limited	More potential	More potential
Efficiency	Low/med	Med/high	Med/high

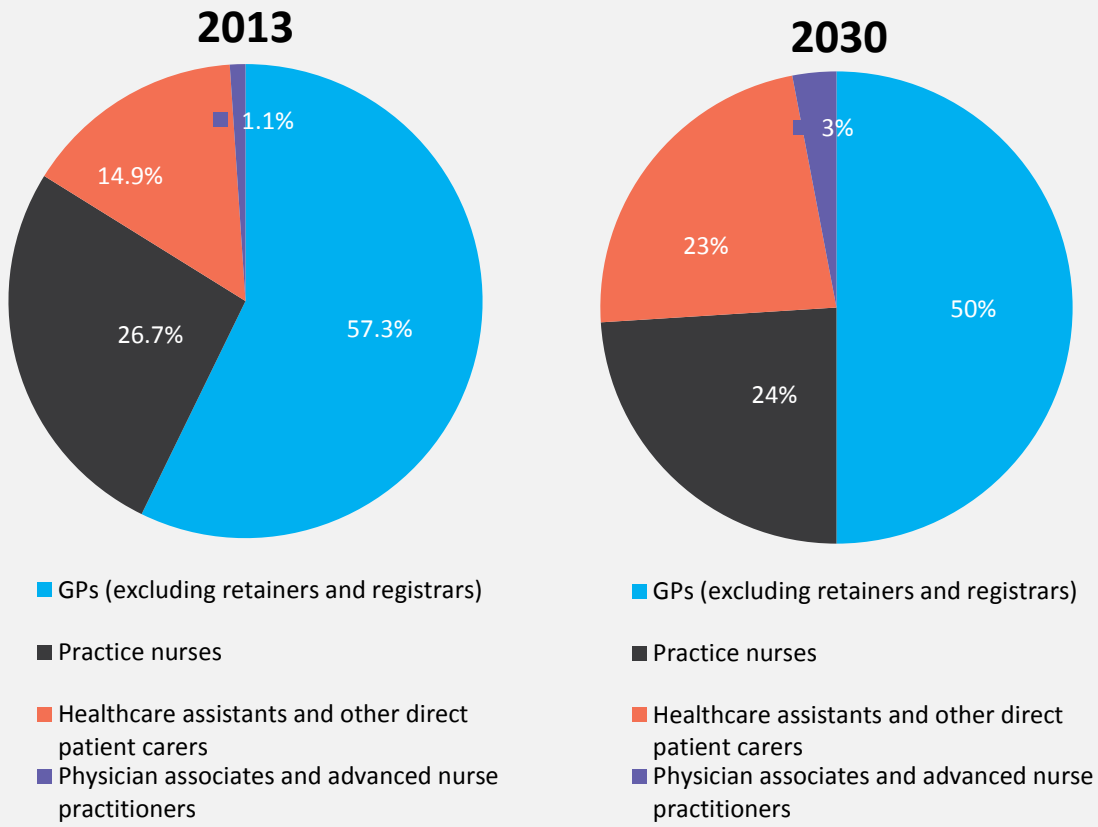
Source: CfWI

Figure 38 shows the projected change in the GP practice team by 2030 (obtained by extrapolation of the 2013 figures). In 2013, the GP practice team consisted of a majority of GPs and practice nurses with only a small proportion of healthcare assistants, other direct patient carers, physician associates and advanced nurse practitioners. By 2030, through this broader skill mix that is less reliant on GPs, the proportion of GPs and practice nurses in traditional practices may have decreased by 7.3 and 2.7 percentage points respectively. Healthcare assistants and other direct patient carers may have increased to around 23 per cent and physician associates and advanced nurse practitioners to around 3 per cent.

Both models have the capacity to deliver the high-quality, cost-effective and better-coordinated primary care that patients expect. In practice both models are likely to emerge across the country, alongside smaller, more traditional GP practices. No single model, however flexible, can hope to suit the diversity of local health economies across England. As NHS England (2014) recently said:

> *We plan to work with national and local partners to identify the best emerging examples of service models that deliver these outcomes and improvements. Service models need to be locally designed and need to be sensitive to local needs, priorities and circumstances: what may be suitable for a very transient community in an inner city may not be right for a very stable population dispersed across a large rural area. There can be therefore no single blueprint.*

Figure 38: General practice clinical team, 2013 (actual) and 2030 (extrapolation)*

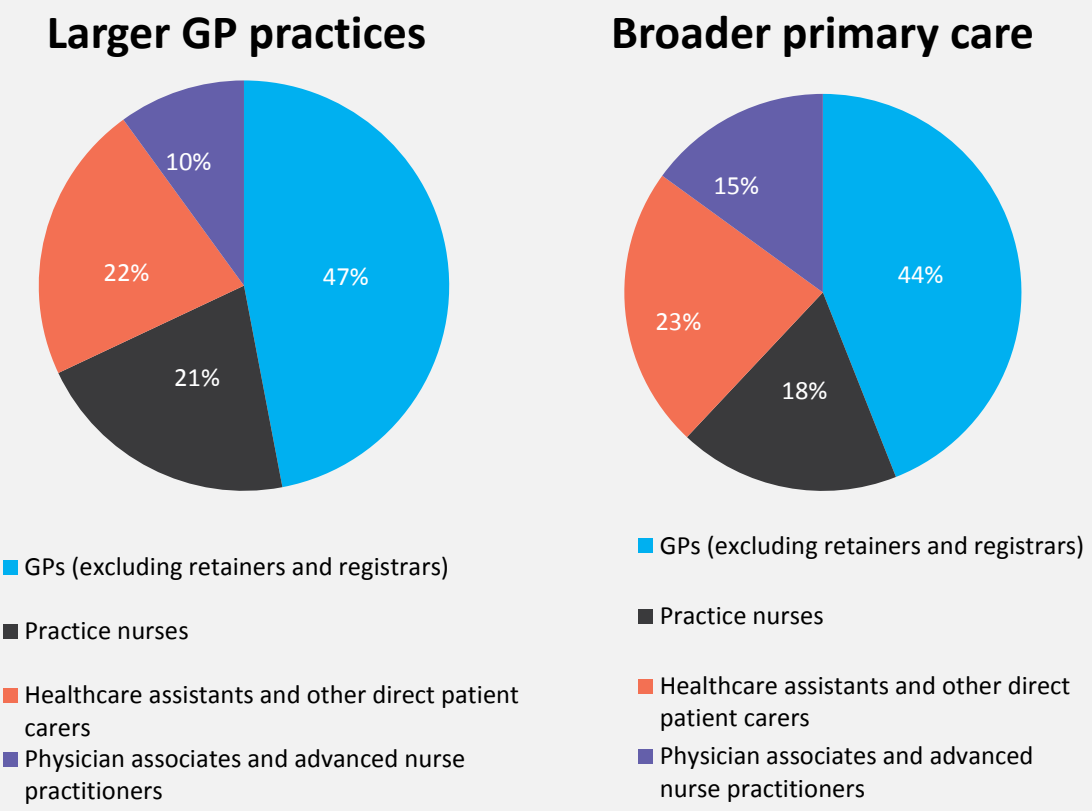


Source: HSCIC (2014) and CfWI medical workforce system dynamics model for England
Note: 2030 estimates are an extrapolation of 1995-2013 trends. *See Table F6 of Annex F

There is less reliance on GPs under all three alternative models (the 2030 model, the larger GP practice model and the broader primary care model) and greater reliance on other primary care professionals to provide clinical services than now.

The GP workforce implications will depend on the proportions of skill mix in each model. Therefore the risk of undersupply of GPs has less to do with a reduced reliance on GPs than an increased use of other healthcare professionals. By 2030, the CfWI expects primary care provision will be a mixture of all three models of general practice.

Figure 39: Other general practice models, possible clinical skill mix in 2030*



Source: CfWI medical workforce system dynamics model for England * see Table F6 of Annex F

14. Concluding remarks

This report outlines the CfWI's key findings, modelling results and recommendations on the GP workforce in England, building on the *Preliminary findings (CfWI,* 2013a). Since that report was published the CfWI has spoken to many GPs and other health professionals across England. The CfWI has also updated and refined its workforce system dynamics model, and gathered further evidence.

This report discusses a number of areas that were not covered in the *Preliminary findings*, including the academic GP workforce, GP training practices, out-of-hours GP services, local and regional variation, and a sensitivity analysis of the CfWI's modelling assumptions.

Although the report touches on the workforce implications of more integrated primary care commissioning, and of multidisciplinary teams, these issues merit more comprehensive analysis.

As outlined in the introduction, this workforce review has five main areas of investigation, but the CfWI's most important aim is to help inform workforce planning to reduce the risk of future GP oversupply or undersupply in England. The 'exam question' was:

> *Considering the likely changes to service delivery and models of care over the next 20 years, how do we ensure sufficient supply for the future GP workforce?*

This in-depth workforce review has a long-term objective to provide the evidence base for sustainable improvements in planning for the GP workforce of the future, looking ahead to 2030.

The CfWI considers that a substantial increase in GP training posts is necessary to address expected patient demand, and should be the top priority. Failure to substantially boost GP training risks a major demand-supply imbalance in the medium term.

If the proposed boost to training is accompanied by other substantive measures to boost the effective GP workforce supply, such as those the CfWI understands are proposed by the GP Task Force, it would be appropriate for the **increase in training to be towards the lower end of the 20 to 42 per cent forecast range**.

Other measures to boost GP workforce supply are also necessary, particularly in the short term. They would help to mitigate the risk of a short-term supply shortfall emerging in the next five-to-six years. Additional measures could include a concerted effort to retain older GPs and to encourage GPs to return to the workforce, similar to efforts introduced by the NHS Review (DH, 2000 and 2002). If the proposed increase in GP training is not accompanied by other measures, a larger increase in training places may be warranted to mitigate the risk of demand-supply imbalance.

Looking beyond the GP workforce, other measures may include: promoting alternative primary care delivery service models with a skill mix less reliant on GPs, more effective demand management, better out-of-hours services, and further measures to improve operational efficiency and productivity.

We propose that the direct cost of additional GP training be met through **a reallocation of training posts from other medical specialty training**. Given NHS financial constraints, a significant increase in GP trainees without a commensurate reduction in other non-GP medical training posts is unlikely to be sustainable, particularly in light of the recent Government decision to reduce undergraduate medical student intake (HENSE, 2012). However, the CfWI also recognises that there are significant indirect costs involved in increasing the GP

workforce (such as additional practice staff and premises), which commissioners will need to consider. These are outside the remit of this review.
There is a strong case for NHS commissioners to encourage a broader, more collaborative approach to delivering primary care that makes more effective use of other healthcare professionals (including practice nurses and pharmacists) as community-based multidisciplinary teams offering patients a wider range of services.

General practice and the wider primary healthcare sector face significant changes in the years ahead. **It would be prudent to revisit GP workforce demand and supply in three to five years**, by which time the CfWI will know if the proposal to boost GP training by 2015 has been attained. The CfWI will also be better able to assess the impact of the new GP contract and changes to commissioning, and should have a stronger evidence base on GP activity and patient demand.

Annex A: Acknowledgements

The CfWI sought input from a wide range of health professionals as part of the scoping and consultation for this review. The following stakeholders spoke to us individually, participated in one of the horizon scanning focus groups (October and November 2012) or the scenario generation workshop (November 2012), participated in the Delphi panel exercise, or attended one of our roadshows (March and April 2013). The CfWI would like to thank them for their contributions.

- Karen Adcock*
- Kate Anderson
- Jenny Aston*
- Dr Maureen Baker
- Paul Barber*
- Dr James Barnett
- Mary Beech*
- Lee Beresford*
- Dr Julie-Anne Birch*
- Chris Bird*
- Dr Tom Black
- Nadine Boczkowski
- Liz Brimacombe
- Cathy Brooks*
- Justine Broom*
- Dr Benjamin Brown
- Dr Laurence Buckman
- David Burbidge
- Dr Tony Burch*
- Mike Burgess*
- Nigel Burgess*
- Dr Jane Burns*
- Dr Fraser Campbell*
- Wilfred Carneiro
- Dr Nav Chana
- Robyn Clark*
- Nancy Cooke
- Dr John Crompton*
- Dr Rani Dhillon
- Dr Dina Dhorajiwala
- Dr Tom Dolphin
- Adrian Downing
- Dr Simon Downs*
- Professor Vari Drennan
- Professor Christine Edwards*
- Yvonne Elliott
- Chris Evennett
- Dr Agnelo Fernandes
- Dr Mark Findley
- Sharon Firmin*
- Dr Jane Fitch*
- Monica Fletcher*
- Professor Chris Fowler
- Dr Derek Gallen
- Dr Clare Gerada
- Jemma Gilbert
- Dr Mina Gobrial*
- Steve Gornall*
- Bob Greatorex*
- Dr Sarah Greening*
- Professor Simon Gregory
- Dr John Grenville*
- Steve Griffee*
- Dr Karen Gully*
- Taryn Harding
- Dr Holly Hardy*
- Clare Hines*
- Dr Mike Holmes*
- Tom Houston
- Professor Amanda Howe
- Val Huet*
- Professor Bill Irish*
- Dr Syma Ismail*
- Dr Neil Jackson
- Dr Gareth James*
- Deborah Jaines
- Chris Jeffries*
- Graeme Jeffs*
- Dr David Jenner
- Dr Terry John
- Lesley Johnson*
- Dr Christine Johnson*
- Allan Jolly*
- Aurea Jones*
- Dr Patrick Jordan*
- Meiling Kam*
- Dr Krishna Kasaranevi
- Dr Deirdre Kelley-Patterson*

- Dr Tina Kenny
- Philip Kirby*
- Dr Gillian Kyei
- Dr Helen Law
- Kate Lawrence*
- Dr Barry Lewis
- Dr Brendan Lloyd*
- Dr George Lueddeke*
- Dr Arvind Madan
- Sally Malin*
- Philip Marshall*
- Dr Philip Matthews*
- Dr Beth McCarron-Nash*
- Martin McColgan
- Dr Jane McCombe*
- Rachel McGeorge
- Dr Alistair McLachlan*
- Fran Mead*
- Dr Stephen Millar*
- Dr Sinan Mir
- Catherine Mitchell
- Anne Moger*
- Dr Ulrike Naumann*
- Professor James Neilson
- Paul Newell*
- Dr Vicky Osgood
- Rhydian Owen
- Dr Julia Oxenbury*
- Professor Jim Parle
- Dr Sameer Patel*
- Professor Fiona Patterson
- Belinda Phipps*
- Dr Simon Plint
- Dr Roger Price*
- Dr Ryan Prince*
- Dr Mark Purvis*
- Joe Read
- Claire Ripper*
- Gail Rose*
- Donna Roberts
- Di Roffe
- Amanda Rolland*
- Dr Graham Rutt*
- Adam Scott*
- Karen Scott*
- Julie Seddon*
- Dr Paul Singer
- Joy Simpson*
- Dr Craig Smith
- Helen Smith
- Dr Peter Smith
- Lisa Soultana*
- Professor David Sowden
- Dr John Spicer
- Dr Andrew Spooner
- Rick Stern
- John Stock
- Chris Sutcliffe*
- Dr Tim Swanwick*
- Dr Michael Sweeting*
- Olena Talavera*
- Dr James Thomas
- Ian Thornber*
- Lorna Tinsley
- Peter Tinson
- Dr Benjamin Titford
- Christopher Tompsett*
- Dr Nigel Watson
- Dr Alison Wheeler*
- Paula Wheeler*
- Kirsty White*
- Richard Wilkes*
- Dr Martin Wilkinson*
- Dr Ian Wilson
- Kate Winter
- Amanda Wogan
- Dr Martin Wright

The CfWI would also like to thank our commissioners, Dr Jane Povey (DH) and Patrick Mitchell (HEE).

*Attended one of our roadshows.

Annex B: Supporting data

Table B1: GP training vacancies, 2009-10 to 2013-14

Intake year	Applications	Vacancies	Accepted offers	Competition ratio	Fill rate
2009-2010	5,066	2,719	2,626	1.86	96.6%
2010-2011	4,802	2,732	2,800	1.76	102.5%
2011-2012	4,752	2,672	2,658	1.78	99.5%
2012-2013	5,094	2,687	2,669	1.90	99.3%
2013-2014	5,198	2,850	2,744	1.88	99.5%

Source: GP National Recruitment Office (2013b), Health Education England (2013)

Table B2: Location of initial medical training of GPs working in England 2001 to 2011

Country of qualification	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
UK	23,474	23,751	24,707	25,590	26,363	26,082	26,197	26,648	27,817	27,219	27,428
UK share	81.5%	81.3%	81.4%	81.2%	80.5%	78.8%	78.5%	78.4%	77.7%	77.6%	77.6%
EEA	1,075	1,206	1,334	1,514	1,647	1,696	1,657	1,619	1,723	1,631	1,626
EEA share	3.7%	4.1%	4.4%	4.8%	5.0%	5.1%	5.0%	4.8%	4.8%	4.6%	4.6%
Rest of world	4,253	4,245	4,317	4,419	4,728	5,313	5,510	5,743	6,263	6,233	6,305
Rest of world share	14.8%	14.5%	14.2%	14.0%	14.4%	16.1%	16.5%	16.9%	17.5%	17.8%	17.8%

Source: HSCIC (2012a)

Table B3: Total GP vacancies 2008–10*

Region	2008	2009	2010	Percentage point change 2008–10
England	1.3%	1.6%	2.1%	+0.8 ppt
North East	2.4%	0.7%	3.6%	+1.2 ppt
North West	1.3%	2.3%	2.1%	+0.8 ppt
Yorkshire and the Humber	1.5%	1.0%	2.4%	+0.9 ppt
East Midlands	0.0%	3.2%	3.1%	+3.1 ppt
West Midlands	1.6%	1.4%	2.9%	+1.3 ppt
East of England	0.7%	1.7%	1.8%	+1.1 ppt
London	2.5%	2.4%	2.1%	-0.4 ppt
South East Coast	1.1%	0.2%	0.5%	-0.6 ppt
South Central	0.3%	1.5%	1.0%	+0.7 ppt
South West	1.3%	1.1%	1.7%	+0.4 ppt

Source: HSCIC (2010) *discontinued statistical series

Table B4: GP data by primary care trust and LETB

Table not included because of length, but available on request from: medical@cfwi.org.uk

Annex C: Scenario summaries

Scenario thinking is essential for workforce planning, as a wide range of factors will influence demand and supply in an intrinsically uncertain future. The CfWI worked with knowledgeable stakeholders to identify 'high-impact, high-uncertainty' driving forces that may shape the future and to which workforce planners must therefore be alert.

The objective of the scenario generation workshop is to construct stories that – taken together – describe a range of ways in which the future could plausibly unfold over an agreed timeframe. The objective is not to predict the future, nor to select and define desired futures or solutions. The scenarios should not focus on the internal workings of the profession, but rather on:

- driving forces outside the profession's direct control
- how driving forces could impact on each other in causal chains
- sources of uncertainty.

The six scenarios outlined below reflect the outcomes of a scenario generation workshop held on Thursday 29 November 2012, and subsequent discussions with key attendees.

	Scenario 1: 'Happy GPs, excellent patient care'	Scenario 2: 'GPs good, commissioners bad'
Key assumptions		
	▪ Patient-driven workforce development. ▪ Perceived increase in the status and attractiveness of the GP profession.	▪ Patient-driven workforce development. ▪ Perceived decrease in the status and attractiveness of the GP profession.
Key trends		
	▪ Increased patient and public involvement in planning and decision-making. ▪ Extension and significant investment in GP training. Foundation Year 2 to include a compulsory primary care rotation. ▪ Services increasingly delivered in the community, with better coordination between primary and secondary care.	▪ More flexible working practices leading to GPs becoming accredited with a special interest area. ▪ Fluctuations in public perceptions of GPs. ▪ Primary care not serving needs of the patients.
Key events		
Now to 2020	▪ Widespread public consultation launched to agree case for change in primary care. Consensus emerged. ▪ Recognition that care is best delivered by a content and motivated workforce led to greater remuneration and flexibility of status.	▪ After the largely successful implementation of CCGs and LETBs, a new GP contract was put in place in 2015. This allowed changes in remuneration and more flexible working opportunities.

	Scenario 1: 'Happy GPs, excellent patient care'	Scenario 2: 'GPs good, commissioners bad'
	▪ Increased investment in education and training helped make general practice more attractive, recruitment increased. Retirement bulge avoided and retention increased. ▪ Introduction of increased number of roles for the GP with a Special Interest (GPwSI) programme helped improve interface between primary and secondary care.	▪ Evidence began to surface that the healthcare needs of the population were not being met, possibly due to working in a financially constrained system and poor commissioning decisions. ▪ The press picked up on this story and public support for GP commissioning dropped. ▪ Politicians blamed GPs for making poor commissioning decisions and reflected a public backlash.
2020 to 2030	▪ Increased media and public concern over size of budget. New arrangement held firm due to continued strong public involvement in decision making. ▪ Services (such as MRI scans) increasingly delivered in the community. ▪ A better interface between primary and secondary care due to more varied training. ▪ Increase in multi-professional working helped deliver cost savings.	▪ A change in government meant that the power to commission was removed from GPs, and commissioning bodies (similar to the former PCTs) were reinstated. ▪ New leadership emerged from the GP workforce, who wanted to focus much more on the delivery of care. ▪ The refocusing of GP attention to clinical issues and delivering care, meant that clinical services were improved, as was the public perception of GPs. They became seen as important navigators of care pathways for patients.
Service delivery model themes		
	▪ Services increasingly delivered in the community. ▪ A flexible system with a variation in service delivery models to cater for local needs. ▪ Increased multi-professional working, with increases in the training and development of the practice nurse workforce mirroring that of the GP. ▪ Community and hospital-based doctors received training in both sectors, so a good understanding and better link-up achieved. ▪ The broadening of the GP role includes working alongside social services to provide care closer to home.	▪ GPs reverting to a clinical role, with commissioning responsibilities removed. Increase in clinical time. ▪ GPs navigators of care pathways, and working closer with secondary care. ▪ GPs maintaining their independent contractor status, thus allowing the flexibility brought in by the new contract. The flexibility means that GPs are able to design the clinical services, leading to a wide variation of models. ▪ Due to GPs losing public trust over commissioning problems, leadership and innovation not encouraged or developed.

	Scenario 3: 'Right plan, but wrong tools'	Scenario 4: 'Meltdown in care'
Key assumptions		
	▪ Professionally driven workforce development. ▪ Perceived increase in the status and attractiveness of the GP profession.	▪ Professionally driven workforce development. ▪ Perceived decrease in the status and attractiveness of the GP profession.
Key trends		
	▪ Instability from reform leading to tension between GPs and politicians. ▪ Privatisation of primary care. ▪ Coordination of planning through a plurality of providers.	▪ Lack of organisational cooperation leading to fragmentation. ▪ Interest groups and patients' views not working towards the long-term benefit of the profession, and poor workforce planning. ▪ Reduction in flexibility of the GP role.
Key events		
Now to 2020	▪ The implementation of LETBs led to increased spending on continued professional development (CPD) and training and education successfully becoming aligned to patient needs. ▪ Contractual issues emerged that reduced GP flexibility, with regionally determined pay and working conditions. ▪ The profession was less attractive, and the status was lowered. ▪ GPs became disillusioned with healthcare services and widening health inequalities, and problems with delivery were observed.	▪ The new LETBs suffered from a lack of cooperation and did not plan or invest funds in training strategically. Repeated attempts to address this saw a piecemeal approach to skills development and training strategies. ▪ The federated model initially proved attractive to CCGs, but CCGs buckled under the weight of imposed contractual changes. ▪ The patient voice became more assertive through the use of Quality Outcome Framework targets. Competencies had been defined by interest groups, and were poorly designed.
2020 to 2030	▪ In the 2020 election, the opposition party pushed for radical reform of primary care. An increase in privatised healthcare services was observed. ▪ New policies subsequent to this reform led to a plurality of healthcare provision, and consequently a fragmented training system.	▪ Due to poorly designed competencies and training, doctors in training were mismatched to system demand. A scramble for jobs ensued, with increasing numbers failing to find work in general practice. Numbers in medical schools dropped.

	Scenario 3: 'Right plan, but wrong tools'	Scenario 4: 'Meltdown in care'
	▪ The number of different providers led to increasingly complex issues of GP supply, and of the planning of education and training. This lowered the morale of GPs, meaning lower recruitment and a significant gap in primary care. ▪ Demand for GP services continued to increase, while the supply decreased.	▪ Pay and morale fell in medicine as perceived status dropped. Pressure on medical education training budgets meant lower-quality training and higher fees. A decline in leadership compounded the decline in status. ▪ A fractured, siloed approach to training, and continuing contractual issues, meant there was a perceived decrease in flexibility. The quality of recruits decreased, and regional recruitment inequalities increased. Provision of care was in meltdown, general practice had become an unattractive career, and patients were disillusioned.
Service delivery model themes		
	▪ The GP partnership model has been phased out, with the majority of GPs salaried. ▪ The salaried service includes performance-based pay and recognition. ▪ Competition between providers means pockets of good practice, but due to the lack of cooperation, best practice not shared.	▪ GP working conditions not reflecting the workforce demographics. Few flexible working arrangements have been offered to a workforce that has a high proportion of women. ▪ Poor relations between different organisations leading to disjointed care, and little multi-professional working. ▪ Some localities having trouble recruiting GPs due to reductions in numbers of doctors in training, and GPs recruited do not always have the skills needed.

	Scenario 5: 'Technology through regulation'	Scenario 6: 'Rise of the machines'
Key assumptions		
	▪ High regulation of technological developments. ▪ Reliable products with public buy-in.	▪ Low regulation of technological developments. ▪ Unreliable products.
Key trends		
	▪ Well-planned use of technology, with training and job roles considered. ▪ Involvement of the public and patients in decision-making. ▪ Caution from both the public and public institutions in the use of technology.	▪ Patient as a powerful consumer. ▪ Reshaping of the primary care workforce through the creation of a new, low-paid role. ▪ Poor strategic thinking.
Key events		
Now to 2020	▪ Continued financial constraints meant legislators and civil servants looked towards technology to provide cost savings. ▪ A consensus was reached among stakeholders, whereby technology would be introduced, underpinned by a robust regulatory structure. A non-departmental public body was set up to provide licenses to products, after rigorous testing. ▪ Health technology modules were introduced into training for healthcare professionals, and GPs helped design high-quality products. ▪ A stable health system was maintained, and products helped people self-diagnose and self-manage their conditions.	▪ Public awareness of technology in healthcare increased, and legislators responded to this by offering commissioners incentives to invest in technology to allow patient self-monitoring. ▪ The role of 'healthcare technician' was heavily expanded, with only basic certification needed. This meant that many GPs and practice nurses found themselves out of work. ▪ Investment in the GP workforce decreased, as patients were able to diagnose and manage their conditions themselves. ▪ Fierce lobbying from the technology industry meant that a light-touch regulatory model was adopted.
2020 to 2030	▪ By 2025, growing public and media frustration at a system perceived to stifle innovation. ▪ After initial caution, the products were trusted, and empowered patients demanded more. ▪ The regulatory agency responded to these issues by increasing public participation in decision-making.	▪ Until around 2022, development was steady, with public buy-in of the products. ▪ A series of mergers between the technology companies led to three major companies providing telehealth applications to GPs. The market became less competitive.

	Scenario 5: 'Technology through regulation'	Scenario 6: 'Rise of the machines'
	▪ A large primary care workforce was still needed, with face-to-face consultations remaining at a premium.	▪ A loss of competitive edge meant less money was spent on research and development. The applications became unreliable, and misdiagnosis became common. ▪ Public trust in technology broke down, and the public reverted to valuing face-to-face consultations. ▪ The cuts made a decade earlier meant that primary care services were ill-equipped to handle these remodelled public attitudes. ▪ Primary care services found themselves tied in to costly long-term contracts with technology companies, and could not service their patients.
Service delivery model themes		
	▪ Large workforce needed, with face-to-face consultations still demanded. ▪ GPs spending time helping develop clinical technologies, meaning an expanded salaried/locum workforce. ▪ Multi-professional working increased, to help deal with the large demand of face-to-face consultations.	▪ Similar contracting model present, with CCGs able to commission services independently. ▪ Patient voice more powerful and much higher expectations. Less tolerant of waiting, and demanding longer opening hours. ▪ CCG managers keen to respond to the public's demands and create a stronger out-of-hours system, but the underfunded and under-skilled workforce is unable to provide the service desired.

Source: CfWI scenario generation workshop, November 2012

Annex D: Data sources and modelling assumptions

Supply modelling assumptions

Model element/ variable	Data confidence rating[16]	Source of data/assumption	Validation	Data/assumption
Annual medical school intake from England	VH	HEFCE medical and dental return, November 2006-11. A 2 per cent reduction in intake from 2013-14	n/a	5,766 home fees students per year from 2013
Annual medical school intake from outside of country	VH	HEFCE A 2 per cent reduction in intake from 2013-14	n/a	485 students per year from 2013
Annual intake into GP training from England's foundation programme	n/a	Calculated by model from flows into training	n/a	
Annual intake into GP training from outside England	L	No specific data was available to the CfWI at the time of modelling	CfWI estimate used due to lack of evidence	100 (assumed)
Annual intake into GP training from outside England, age profile	M	GMC data, 2010	CfWI estimate used due to lack of evidence	UK age profile used as proxy, see below

[16] VH= very high; H=high; m=medium; L=low

<table>
<tr><th>Model element/ variable</th><th>Data confidence rating[16]</th><th>Source of data/assumption</th><th>Validation</th><th>Data/assumption</th></tr>
<tr><td>Annual intake into GP training from career posts</td><td>L</td><td>No specific data was available to the CfWI at the time of modelling</td><td>CfWI estimate used due to lack of evidence</td><td>Estimated at 100 men and 100 women per year</td></tr>
<tr><td>GP training posts filled (%)
Revised assumption</td><td>n/a</td><td>Average accepted offers into GP ST1 for the 5 years to 2013-14 were used (2,699)</td><td></td><td>The following number of doctors in training – actual (a) and estimated (e):
<table><tr><th>Year</th><th>Posts filled</th></tr><tr><td>2012a</td><td>2,669</td></tr><tr><td>2013a</td><td>2,744</td></tr><tr><td>2014e</td><td>2,699</td></tr><tr><td>2015e</td><td>2,699</td></tr><tr><td>2016e</td><td>2,699</td></tr><tr><td>2017e</td><td>2,699</td></tr></table>
Note: These numbers are revised from the March 2013 report</td></tr>
<tr><td>GP training initial ‘stock’</td><td>H</td><td>Health Education England survey of deaneries, autumn 2012 (unpublished)</td><td>Data is available for the count of posts, as well as count of national training numbers (NTNs). The smaller of the two is used in the model to avoid an overestimate.</td><td>8,729 calculated as total GP NTNs minus those ‘not in use’, out-of-programme (OOP) and ‘other’ NTNs.

62 per cent are assumed to be women, based on 2011 HSCIC medical census registrar data.</td></tr>
<tr><td>GP training initial ‘stock’, age profile by gender</td><td>H</td><td>General Medical Council (GMC) data, 2010</td><td>n/a</td><td>Table available on request; median age is 26; over 90 per cent are in the age range 25 to 40.</td></tr>
</table>

Model element/ variable	Data confidence rating[16]	Source of data/assumption	Validation	Data/assumption
Length of GP training and 'delays'	M	MRCGP exam pass/fail data Unpublished and unverified data from Wessex deanery Health Education England survey of deaneries, Autumn 2012 (unpublished) Communication with the RCGP	The data and assumptions have been verified with the RCGP.	Length of training is influenced by delays. Model uses the assumption that 89.7 per cent of male GPs in training will take three years, 5.3 per cent four years and 5 per cent take five years. The assumption for women is that 61.1 per cent take three years, 21.8 per cent four years, 16.1 per cent five years and 2 per cent six years. Deanery stocktake data shows that 12.1 per cent of all doctors in training are training less than full time (LTFT), with an average participation rate of 0.58. Therefore the CfWI assumes these doctors in training will take five years to complete. The RCGP has advised that the fraction of men training LTFT is probably less than the percentage taking four years. Therefore a nominal 5 per cent of men are estimated to take five years to train, and the women value was increased to 16.1 per cent to maintain the total number doing LTFT training. The RCGP advised that some women have taken six or seven years to complete, although this figure would be very small. Therefore 1 per cent of women are set to take six years to train. It is assumed that any trainees who pass MRCGP exams on the fourth attempt take four years to complete training. It has been assumed that 16.5

Model element/ variable	Data confidence rating[16]	Source of data/assumption	Validation	Data/assumption
				per cent of women doctors in training go on maternity leave during training, and therefore take four years on average.
GP training attrition rate (those who leave the system)	M	MRCGP exam pass/fail data	Postgraduate deans approached were unable to supply data. The available data and assumptions have been verified with the RCGP.	The model is set up to replicate attrition of 2 per cent in ST1 and ST2, and 4.5 per cent in ST3. The ST3 figure is based on historical MRCGP exam results, and those who failed four or more times. Half of the doctors in training who fail the exam are assumed to leave the system
GP training attrition rate (those who leave GP training to seek a career post or other training)	L	MRCGP exam pass/fail data	Postgraduate deans approached were unable to supply data. The available data and assumptions have been verified with the RCGP	See 'GP training attrition rate (those who leave the system)' above. The other half of GPs in training who fail are assumed to seek career posts or other training posts.
Percentage who complete training and then leave the system	L	Assumption; no specific data was available to the CfWI at the time of modelling	The CfWI estimate used due to lack of evidence	5 per cent
Annual inflow of GPs from outside of English system	L	No specific data available to the CfWI	The CfWI estimate used due to lack of evidence	0 (assumed)

Model element/ variable	Data confidence rating[16]	Source of data/assumption	Validation	Data/assumption
Annual re-joiners to GP	L	No specific data available to the CfWI	The CfWI estimate used due to lack of evidence. See GP attrition rate for details.	0 (assumed)
Annual flow of trained hospital doctors to GP conversion training	L	No specific data available to the CfWI	The CfWI estimate used due to lack of evidence	0 (assumed)
GP attrition rate **Revised data and assumption**	M	HSCIC GP census 2008 to 2012, headcount for GP providers, other/salaried GPs, and GP retainers by age and gender. HSCIC GP census 1996 to 2007, contract count for general practitioners (excluding GP registrars and GP retainers) by age. The attrition rate accounts for retirements (those 49 and older) and early leavers (those 48 and younger). National Recruitment Office for General Practice training (GPNRO) data on the numbers starting GP training from 2008 to 2013, and historical reports for the numbers starting GP training from 1999 to 2007.	The CfWI continues past trends due to lack of specific evidence	Historical data (1999 to 2012) is used to build a picture of the likelihood of a GP leaving the workforce, by age and gender. For example, 13 per cent of 60-year-old men leave, and 13.5 per cent of 65-year-old men leave. 19.5 per cent of 60-year-old women GPs leave and 21 per cent of 65-year-old women leave. The CfWI assumes that 2.5 per cent of GPs below the age of 49 leave each year. This is based on the average attrition rate per year for the age group from 2002 to 2011. The attrition rate for under-49s is calculated from year-on-year total headcount, the number of joiners to the workforce by year, and an estimate of the number of retirements each year. The historical values vary widely between years.

Model element/ variable	Data confidence rating[16]	Source of data/assumption	Validation	Data/assumption
GP participation rate	M	HSCIC GP census 2012, FTE and headcount data for GP providers, other/salaried and retainers	Participation rate by age and gender	Participation rate calculated by gender and in age bands of one year. Average participation by women of 86.19 per cent, average participation by men of 92.44 per cent in 2012. The average participation rate changes each year due to the changing ratio of genders and ages.
Initial 'stock' of GPs Revised data	H	HSCIC GP census 2012 (HSCIC, 2013) , headcount for GP providers and other/salaried GPs by age and gender	n/a	18,949 men, 16,835 women
Initial stock of GPs, age profile	H	HSCIC GP census 2012, headcount by age and gender for GP providers, other/salaried GPs, and GP retainers	n/a	Age profile represents that of the current English GPs
Age profile of GP re-joiners	M	No specific data available to the CfWI	CfWI estimate used due to lack of evidence.	Assume the same age profile as the GP workforce

Source: CfWI medical workforce system dynamics model for England

Baseline demand modelling assumptions

The following table shows the assumptions used to forecast future baseline demand for GP services due to demographic changes. Baseline demand accounts for both the increased size of the population and also the changing age and gender balance (particularly a higher proportion of older people) to 2030.
In order to obtain the baseline forecasts, the CfWI calculated increasing demand for medical care due to population growth using ONS projections of England's population**,** and weightings for medical services requirement by age and gender. The baseline growth of the population in England uses the 2010-based principal population projection for England that assumes:

- a long-term average completed family size of 1.85 children per woman

- life expectancy at birth in 2035 of 83.6 years for men and 87.2 years for women, with constant rates of mortality improvement assumed thereafter
- long-term annual net migration to the UK of +172,500 per year.

The relative demand from people in a particular age band and gender is calculated for the whole population, and totalled for each future year to give an estimate of the overall future health service demand by year. The baseline weightings for health service use were calculated for both primary and secondary care. Primary care weightings used PCT revenue allocation weightings by age and gender (DH, 2011). Secondary care weightings used outpatient attendances data by age and gender (HSCIC, 2012c).

Note that assumptions for the six demand scenarios were estimated by a Delphi panel, as shown in Annex E.

Demand for primary medical care	Demographic multiplier	Source of data/assumption
Demand baseline	1.21	Office for National Statistics (2012a) Table A3-4, Principal projection - England population single year of age, 2010-based. NHS Health and Social Care Information Centre (2012) Hospital Episode Statistics for England. Main specialty by age group for all outpatient attendances: All, 2010-11. Department of Health (2011) Exposition book 2011-2012, Table 6: 2011-12 primary medical services component, Age-gender weights.

The baseline demand is further adjusted to account for changes in productivity. The baseline estimate is a productivity increase of 0.4 per cent per year to 2030. This has the impact of reducing future demand.

Demand for primary medical care	Productivity multiplier	Source of data/assumption
Demand baseline	0.93	Productivity is assumed to increase by 0.4 per cent annually. Office for National Statistics (ONS) (2012c) *Public Service Productivity Estimates: Healthcare, 2010.*

Source: CfWI medical workforce demand model for England

Annex E: Key uncertainties (Delphi panel exercise)

A Delphi panel was used to quantify key assumptions for the future workforce in each of the six scenarios. The questions related to either supply or demand and are shown below. The tables below show the average (median) values obtained from the Delphi panel exercise.

Delphi questions – supply assumptions

- What do you think the average participation rate of GPs would be in 2030?
- What do you think would be the percentage of women in the GP workforce in 2030?
- What do you think would be the percentage change in the number of salaried GPs as a proportion of all GP providers?
- What do you think would be the percentage change in the number of GPs leaving the workforce for reasons other than retirement?
- What do you think would be the average retirement age for GPs in 2030?

Supply of primary medical care in 2030	Participation rate of GPs (women)	Participation rate of GPs (men)	Percentage of women in the GP workforce	Percentage change in the number of salaried GPs as a proportion of all GP providers	Percentage change in the number of GPs leaving the workforce for reasons other than retirement	Average retirement age for GPs
Supply baseline	0.81	0.95	44%	0	n/a	58 (women) 60 (men)
Scenario 1	0.85	0.9	65%	150% (women) 180% (men)	100% (women) 100% (men)	62 (women) 66 (men)
Scenario 2	0.8	0.85	60%	150% (women) 160% (men)	104% (women) 104% (men)	62 (women) 66 (men)
Scenario 3	0.78	0.83	60%	180% (women) 190% (men)	115% (women) 120% (men)	58 (women) 62 (men)
Scenario 4	0.72	0.8	60%	180% (women) 180% (men)	130% (women) 120% (men)	55 (women) 60 (men)
Scenario 5	0.75	0.8	60%	155% (women) 165% (men)	105% (women) 105% (men)	58 (women) 62 (men)
Scenario 6	0.7	0.77	60%	190% (women) 190% (men)	150% (women) 145% (men)	58 (women) 58 (men)

Source: Delphi panel exercise

Delphi questions – demand assumptions

- For those registered with a GP, what do you think would be the average change in need for healthcare by 2030?
- What do you think would be the change in the amount of service provided by GPs by 2030, due to changes in models of care such as skill mix, impact of technology, political priorities, timing of service delivery and clinical services delivered?

The Delphi panel answers have been converted into a multiplier that indicates how much greater the demand will be in the future compared to current demand.

The demographic multiplier used for the demand baseline is not applied to the six demand scenarios, as Delphi participants were asked to take account of demographic factors when estimating changes in future healthcare needs.

Demand for primary medical care in 2030	Multiplier due to population growth and ageing population*	Multiplier due to change in need for healthcare	Multiplier due to change in the amount of service provided by GPs
Demand baseline	1.21	–	–
Scenario 1	–	1.35	1.23
Scenario 2	–	1.40	1.10
Scenario 3	–	1.35	1.01
Scenario 4	–	1.40	0.98
Scenario 5	–	1.40	1.10
Scenario 6	–	1.30	1.01

Source: Delphi panel exercise except where indicated * Demographic multiplier

Annex F: Policy options and sensitivity analysis modelling assumptions

The impact of several policy options to boost GP workforce supply is discussed in Section 11 of the report, while a sensitivity analysis of various demand and supply shocks is discussed in Section 12. These were modelled using the CfWI system dynamics medical model of England. The modelling assumptions for this analysis are set out below.

Section 11 – Policy options to boost supply

Table F1: Modelling of policy options to boost supply through an increase in GP training

Variable name	Unit	2012a	2013a	2014e	2015e	2016e
Baseline supply	GP ST1 posts (accepted offers)	2,669	2,744	**2,699**	2,699	2,699
Policy option A – Increase the baseline supply to match the demand scenario midpoint by 2020	GP ST1 posts (accepted offers)	2,669	2,744	3,012	**3,280**	3,280
Policy option B – Increase the midpoint of the supply scenarios to match the demand midpoint by 2020	GP ST1 posts (accepted offers)	2,669	2,744	3,445	**4,145**	4,145
Policy option C – Increase the midpoint of supply scenarios to match demand midpoint by 2020	GP ST1 posts (accepted offers)	2,669	2,744	3,325	**3,905**	3,905

Source: CfWI medical workforce system dynamics model policy assumption

Section 12 – Sensitivity analysis

Table F2: Modelling of extended training

Variable name	Segment (time to complete training)	Unit	2012	2013	2014	2015	2016
GP training length including delay percentage	Men, 1 year	%	0.0%	0.0%	0.0%	**0.0%**	**0.0%**
GP training length including delay percentage	Men, 2 years	%	0.0%	0.0%	0.0%	**0.0%**	**0.0%**
GP training length including delay percentage	Men, 3 years	%	89.7%	89.7%	89.7%	**44.85%**	**0.0%**
GP training length including delay percentage	Men, 4 years	%	5.3%	5.3%	5.3%	**50.15%**	**95.0%**
GP training length including delay percentage	Men, 5 years	%	5.0%	5.0%	5.0%	**2.5%**	**0.0%**
GP training length including delay percentage	Men, 6 years	%	0.0%	0.0%	0.0%	**0.0%**	**0.0%**
GP training length including delay percentage	Men, 7 years	%	0.0%	0.0%	0.0%	**2.5%**	**5.0%**
GP training length including delay percentage	Women, 1 year	%	0.0%	0.0%	0.0%	**0.0%**	**0.0%**
GP training length including delay percentage	Women, 2 years	%	0.0%	0.0%	0.0%	**0.0%**	**0.0%**
GP training length including delay percentage	Women, 3 years	%	61.1%	61.1%	61.1%	**30.55%**	**0.0%**
GP training length including delay percentage	Women, 4 years	%	21.8%	21.8%	21.8%	**41.1%**	**66.4%**
GP training length including delay percentage	Women, 5 years	%	16.1%	16.1%	16.1%	**16.3%**	**16.5%**
GP training length including delay percentage	Women, 6 years	%	1.0%	1.0%	1.0%	**0.0%**	**0.0%**
GP training length including delay percentage	Women, 7 years	%	0.0%	0.0%	0.0%	**9.1%**	**17.1%**

Source: CfWI medical workforce system dynamics model assumption

GP training takes a minimum of three years. The CfWI defines delays in GP training as any time beyond three years from the date a trainee started training. Delays occur for planned reasons such as out-of-programme (OOP) research/experience or less than full-time training (LTFT), and also for unplanned reasons such as illness. Both types of delay result in a longer period before CCT is achieved and potentially a slower net rate of production of trained GPs.

The following factors are used to inform the delays during training in the GP model:

- maternity leave for women
- multiple attempts to pass MRCGP exams
- less than full-time training.

Each time the model starts a cohort of doctors on the GP training path the CfWI project team assigns the number of years it will take for the doctors to finish training. The length of training assigned varies from three to five years. The table below represents the change in length of training if this moves from three to four years, with a staggered introduction over two years. In 2015 half of new trainees start four-year training. In 2016 and after, all trainees start a four-year course. It is assumed that less-than-full-time trainees now take an average of seven years rather than five, and that maternity leave still delays many trainees. It has been assumed that delays due to exam failure remain the same in four-year training because exams will act as gateway assessments to the Specialty Training 4 (ST4) year.

Table F2 shows the percentage of trainees the CfWI assumes will complete training in a given time. For example, for men in 2014, the CfWI assumes zero per cent will complete in two years, and 5.3 per cent will take four years; for men starting training in 2016 the CfWI assumes 95 per cent will take four years to finish training.

Table F3: Modelling assumptions for late retirement

Variable name	Unit	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
GPs retirement age, men	Years	60	60	60	60	60	60	60	**61**	**61**	**61**	**61**	**61**	**61**	**61**	**61**	**62**	**62**	**62**	**62**
GPs retirement age, women	Years	58	58	**59**	**59**	**60**	**60**	**60**	**61**	**61**	**61**	**61**	**61**	**61**	**61**	**61**	**62**	**62**	**62**	**62**

Source: CfWI medical workforce system dynamics model assumption

Table F3 shows the change in the average retirement age of GPs if there is a staggered increase of average women GPs' retirement age by two years to match that of men GPs by 2017. In 2019 there is a one-year increase in average GP retirement age and another one-year increase in 2027.

Table F4: Modelling assumptions for wave of early retirement

Variable name	Unit	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
GPs retirement age, men	Years	60	**59**	**59**	**59**	**59**	**59**	60	60	60	60	60	60	60	60	60	60	60	60	60
GPs retirement age, women	Years	58	**57**	**57**	**57**	**57**	**57**	58	58	58	58	58	58	58	58	58	58	58	58	58

Source: CfWI medical workforce system dynamics model assumption

Table F4 shows the change in the average retirement age of GPs if there is a decrease in the average GP's retirement age by one year from 2013 to 2017. In 2018 the retirement assumptions revert back to the baseline.

Table F5: Modelling assumptions for an increase in net emigration

The table below shows the assumptions used to model the impact of an increase in emigration by GPs.

Variable name	Age	Increase per year	Period
GP attrition rate	20-35	0.25%	2013-20
GP attrition rate	36-45	0.1%	2013-20
GP attrition rate	46-80	0%	2013-30

Source: CfWI medical workforce system dynamics model assumption

Section 13 – The future GP and primary care

Table F6: Assumptions used to model future changes in the delivery of primary care services

General practice clinical workforce skill mix (FTE basis)	General practice workforce 2013	Projected general practice workforce 2030	More very large GP practices 2030	Broader primary care system 2030
General practitioners (excluding retainers and registrars)	57.3%	50%	47%	44%
Practice nurses	26.7%	24%	21%	18%
Healthcare assistants	14.9%	23%	22%	23%
Physician associates and advanced nurse practitioners	1.1%	3%	10%	15%
Total	100%	100%	100%	100%

Source: HSCIC (2014) and CfWI skill mix modelling assumptions

Annex G: General Practice Task Force

Terms of reference

- To review the current national employment environment including vacancies, retirement trajectory, retention, attrition and participation rates by LETB/deanery.
- To review how improvements can be made to GP workforce data collection.
- To assess the changing options available for general practice employment in the light of recent changes to the wider NHS commissioning landscape, including career progression.
- To review the historical average time of GP training to CCT by LETB/deanery.
- To review the current training capacity by deanery and assess where immediate opportunities are available and undertake a gap analysis of where need is most required.
- To assess and understand the cost of GP training in its constituent parts and to review alternative options.
- To assess the cost by LETB/deanery of a three-year plan to reach national GP training levels with mitigation for lost specialty numbers in other specialties.
- To understand the motivation factors and barriers of trainees to want to work in general practice.
- To review what factors might boost interest and fill rates into GP training positions.
- To undertake a stocktake of good practice for using a range of other professionals as part of the primary care team and plan a coordinated plan for spreading good practice.
- To make recommendations to the Medical Programme Board covering workforce, education and training, cost and timescale for delivering the national training numbers required by 2015.
- To note any implications of a four-year GP training programme to the above (while recognising that such a change is not approved).

Membership

The original proposed membership of this taskforce is:

- Director of Medical Education, DH
- DH workforce lead
- Senior Clinical Advisor, DH
- SHA cluster workforce lead representative (to March 13)
- Clinical commissioning group representatives (3)
- LETB representatives (3)
- Deanery representatives (3)
- COGPED representatives (2)
- RCGP representatives
- GPs in training (2)
- BMA (GPC) representative
- NHS employers
- CfWI representative
- Academy of Medical Royal Colleges representative
- DH METP team representatives
- Lay representative.

Annex H: Annual monitoring report

Purpose and aims

The purpose of an annual monitoring report is to help ensure that progress in implementing the recommendations is regularly monitored, the impact of interventions are tracked, and any emerging risks or unintended consequences identified.

The main aims of a GP workforce annual monitoring report are to:

- review progress in increasing GP training posts
- review progress in implementing other key recommendations
- monitor changes to the effective size and capacity of the GP workforce in England, drawing on the annual HSCIC GP census and other data
- update the CfWI's data and revise the modelling assumptions in the CfWI system dynamics model of the medical workforce in England
- draw conclusions and, where appropriate, make recommendations.

The CfWI recommends that the report be published no later than the end of October of each year, with the first report due by 31 October 2014.

Update to the CfWI medical model

A number of annual updates and revisions will be required to ensure the CfWI system dynamics model of the medical workforce in England provides the best available projections of the future GP workforce:

- update actual GP workforce numbers following publication of the latest annual GP census (source: HSCIC)
- update postgraduate training numbers, following completion of the annual recruitment round (source: GPNRO)
- adjust average retirement attrition assumptions after adding in an additional year of transition data from the annual GP census (source: HSCIC)
- review key assumptions, such as trainee or workforce attrition, where the CfWI has better data or an improved methodology.

The bulk of this modelling work would need to occur after the annual HSCIC census is published in March but before the deadline for the annual monitoring report in October of each year.

References

Academy of Medical Royal Colleges (AoMRC) (2012) *Seven Day Consultant Present Care.* [online] Available at: www.aomrc.org.uk/publications/reports-a-guidance/doc_details/9532-seven-day-consultant-present-care.html [Accessed February 2013].

The American Academy of Physician Assistants (AAPA) (2010) *Annual Physician Assistant Census 2010*. [online] Available at: www.aapa.org/research/data_and_statistics.aspx [Accessed April 2013].

Birch, S., Kephart, G., Tomblin-Murphy, G., O'Brien Pallas, L. Alder, R. and Mackenzie, A. (2011) Human resource planning and the production of health: a needs based analytical framework, *Canadian Public Policy*, 33:S1-S16.

British Medical Association (BMA) (2011) *National survey of GP opinion 2011*. London: Health Policy and Economic Research Unit.

British Medical Association (BMA) (2013) *Seventh report - The cohort study of 2006 medical graduates*. London: Health Policy and Economic Research Unit. [online] Available at: bma.org.uk/working-for-change/negotiating-for-the-profession/workforce/cohort-study [Accessed April 2013].

British Medical Association (BMA) (2014) *BMA quarterly tracker survey: An extract of responses from GPs*. London: Health Policy and Economic Research Unit. [online] Available at: http://bma.org.uk/-/media/files/pdfs/working%20for%20change/policy%20and%20lobbying/bma%20gp%20omnibus%20survey%20report%20feb2014.pdf [Accessed March 2014].

Bureau of Labor Statistics, U.S. Department of Labor (2012) *Occupational Outlook Handbook: Physician Assistants 2012-13 Edition.* [online] Available at: www.bls.gov/ooh/healthcare/physician-assistants.htm [Accessed April 2013].

Butler, J.R., Bevan J.M. and Taylor R.C. (1973) *Family doctors and public policy.* London: Routledge and Kegan Paul.

Carr-Hill, R. with Rice, N. (2001) *A GMS needs measure based on the GHS*, Resource Allocation Research Paper No. 24, Department of Health. [online] Available at: webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4139601.pdf [Accessed November 2013].

Centre for Workforce Intelligence (2011a) *General practice: CfWI medical fact sheet and summary sheet*. [online] Available at: www.cfwi.org.uk/publications/general-practice-cfwi-medical-fact-sheet-and-summary-sheet-august-2011 [Accessed February 2013].

Centre for Workforce Intelligence (2011b) *Workforce risks and opportunities: Pharmacy*. [online] Available at: www.cfwi.org.uk/publications/workforce-risks-and-opportunities-pharmacy [Accessed February 2013].

Centre for Workforce Intelligence (2012a) *A Technical Report (Part 1): From scenario generation to workforce modelling: a new approach*. [online] Available at: www.cfwi.org.uk/publications/a-technical-report-part-1-for-a-strategic-review-of-the-future-healthcare-workforce [Accessed February 2013].

Centre for Workforce Intelligence (2012b) *A Technical Report (Part 2): From scenario generation to workforce modelling: a new approach*. [online] Available at: www.cfwi.org.uk/publications/a-technical-report-part-2-for-a-strategic-review-of-the-future-healthcare-workforce [Accessed February 2013].

Centre for Workforce Intelligence (2012c) *Practice nurses: Workforce risks and opportunities – education commissioning risks summary from 2012*. [online] Available at: www.cfwi.org.uk/publications/practice-nurses-workforce-risks-and-opportunities-education-commissioning-risks-summary-from-2012 [Accessed February 2013].

Centre for Workforce Intelligence (2013a) *GP in-depth review: Preliminary findings report* [online] Available at: www.cfwi.org.uk/publications/gp-in-depth-review-preliminary-findings [Accessed April 2013].

Centre for Workforce Intelligence (2013b) *A strategic review of the future pharmacist workforce: informing pharmacy student intake* [online] Available at: www.cfwi.org.uk/publications/a-strategic-review-of-the-future-pharmacist-workforce [Accessed September 2013].

Centre for Workforce Intelligence (2013c) *Think integration, think workforce: Three steps to workforce integration* [online] Available at: www.cfwi.org.uk/publications/think-integration-think-workforce-three-steps-to-workforce-integration-1 [Accessed January 2014].

Centre for Workforce Intelligence (2014) *GP in-depth review: Horizon scanning* [online] Available at: www.horizonscanning.org.uk/projects/general-practitioner-gp-in-depth-review/ [Accessed January 2014].

Commission on Future Models of Care (2013) *Now or Never: Shaping pharmacy for the future*, Royal Pharmaceutical Society. Available at: www.rpharms.com/models-of-care/report.asp [Accessed November 2013].

Commonwealth Fund (2012) *The Commonwealth Fund 2012 International Health Policy Survey of Primary Care Physicians.* Available at: www.commonwealthfund.org/ [Accessed July 2013].

Deloitte (2014) *Under pressure: The funding of patient care in general practice.* Accessed at www.rcgp.org.uk/campaign-home/news-and-blogs/2014/april/~/media/Files/Policy/PPF/Deloitte%20Report_Under%20Pressure.ashx [Accessed April 2014].

Department for Communities and Local Government (DCLG) (2011) *English indices of deprivation 2010.* [online] Available at: www.gov.uk/government/publications/english-indices-of-deprivation-2010 [Accessed April 2013].

Department for Work and Pensions (DWP) (2013) *State Pension age timetables.* Available at www.gov.uk/government/uploads/system/uploads/attachment_data/file/181343/spa-timetable.pdf [Accessed April 2013].

Department of Health (2000) *The NHS Plan*. White paper, Cm 4818-I. [online] Available at: webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_4002960 [Accessed June 2013].

Department of Health (2002) *Delivering the NHS Plan*. Cm 5503. [online] Available at: webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4005818 [Accessed June 2013].

Department of Health (2008) *NHS Next Stage Review: Our vision for primary and community care.* [online] Available at: webarchive.nationalarchives.gov.uk/20130107105354/http:/www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_085947.pdf [Accessed June 2013].

Department of Health (2011) *Exposition book 2011-2012, Table 6: 2011-12 primary medical services component, Age-gender weights*. [online] Available at: www.gov.uk/government/publications/exposition-book-2011-2012 [Accessed April 2013].

Department of Health (2012a) *A short guide to health and well-being boards*. [online] Available at: healthandcare.dh.gov.uk/hwb-guide/ [Accessed February 2013].

Department of Health (2012b) *Planning medical and dental student intakes for the future needs of the NHS*. London. [online] Available at: www.gov.uk/government/news/planning-medical-and-dental-school-intakes-for-the-future-needs-of-the-nhs [Accessed April 2013].

Department of Health (2013a) *A mandate from the Government to Health Education England: April 2013 to March 2015.* London. [online] Available at: www.gov.uk/government/publications/health-education-england-mandate [Accessed July 2013].

Department of Health (2013b) *A promise to learn – a commitment to act: improving the safety of patients in England*. [online] Available at: www.gov.uk/government/publications/berwick-review-into-patient-safety [Accessed October 2013].

Department of Health and Prime Minister's Office (2013) *Press release: Seven day, 8am – 8pm, GP access for hard-working people.* London. [online] Available at: www.gov.uk/government/news/seven-day-8am-8pm-gp-access-for-hard-working-people [Accessed October 2013].

Department of Health and NHS England (2014) *Transforming Primary Care*. [online] Available at: www.gov.uk/government/publications/plans-to-improve-primary-care [Accessed April 2014].

Ding, A. Hann, M. Sibbald, B. (2008) *Profile of English salaried GPs: labour mobility and practice performance*. British Journal of General Practice, 58:546, pp20-25.

Drennan V.M., et al. (2012) *Physician assistants in English primary care teams: A survey*. Journal of Interprofessional Care. 26:5, pp416-8.

Drennan V., Halter M., Levenson R. and Tye C. (2011) *Physician assistants in English general practice: a qualitative study of the employers' viewpoint*. Journal of Health Service Research Policy,16:2, pp75-80.

Fitzpatrick S. (2012) *A survey of staffing levels of medical clinical academics in UK Medical schools*, Medical Schools Council [online] Available at: www.medschools.ac.uk/Publications/Pages/ClinicalAcademicStaffSurvey2012.aspx [Accessed April 2013].

Francis, R. (2013) *Report of the Mid Staffordshire, NHS Foundation Trust Public Inquiry*. [online] Available at: www.midstaffspublicinquiry.com/report [Accessed February 2013].

General Medical Council (GMC) (2011) *The state of medical education and practice in the UK*. [online] Available at: www.gmc-uk.org/publications/somep2012.asp [Accessed February 2013].

General Medical Council (GMC) (2013) *National training survey 2013: key findings.* [online] Available at: www.gmc-uk.org/National_training_survey_key_findings_report_2013.pdf_52299037.pdf [Accessed June 2013].

Goldacre, M. Davidson, J. Maisonneuve, J., Lambert, T. (2013) *Geographical movement of doctors from education to training and eventual career post: UK cohort studies*, Journal of the Royal Society of Medicine, 106:3, pp96-104.

Goddard, M., et al. (2010) *Where did all the GPs go? Increasing supply and geographical equity in England and Scotland.* [online] Available at: www.ncbi.nlm.nih.gov/pubmed/19843638 [Accessed September 2013].

Goodwin, N., et al. (2011) *Improving the quality of care in general practice: Report of an independent inquiry commissioned by The King's Fund*. [online] Available at: www.kingsfund.org.uk/sites/files/kf/ improving-quality-of-care-general-practice-independent-inquiry-report-kings-fund-march-2011_0.pdf [Accessed September 2013].

Government Office for Science (2011) *Sharing Experience: Improving engagement across SAC secretariats*, Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/283108/10-1012-sharing-experience-across-sac-secretariats.pdf [Accessed March 2014].

GP National Recruitment Office (GPNRO) (2012) *Reports, facts and figures – Recruitment to August 2009, 2010, 2011, 2012 intake.* [online] Available at: www.gprecruitment.org.uk/reports.html [Accessed February 2013].

GP National Recruitment Office, (GPNRO) (2013a) *Recruitment to Academic GP training in the UK is different in each country*. [online] Available at: www.gprecruitment.org.uk/academic.html [Accessed February 2013].

GP National Recruitment Office, (GPNRO) (2013b) 2013 GP recruitment numbers. (email correspondence, July 2013).

GP Task Force (forthcoming) *Securing the Future GP Workforce: Delivering the Mandate on GP Expansion.*

Gregory, S. (2009) *General practice in England: an overview*. The King's Fund. [online] Available at: www.kingsfund.org.uk/publications/briefing-general-practice-england [Accessed February 2013].

Hann, M. and Gravelle, H. (2004) *The maldistribution of general practitioners in England and Wales: 1974–2003*. British Journal of General Practice, 54, pp894-898.

Hann, M., et al. (2013) *Seventh National GP Worklife Survey*, University of Manchester. [online] Available at: www.population-health.manchester.ac.uk/healtheconomics/research/ FinalReportofthe7thNationalGPWorklifeSurvey.pdf [Accessed September 2013].

Hansard (2012) *NHS: General Practitioners,* questions asked by Lord Laming to Earl Howe, the Parliamentary Under-Secretary of State, Department of Health. [online] Available at: www.publications.parliament.uk/pa/ld201213/ldhansrd/text/120523-0001.htm [Accessed February 2013].

The Health and Education National Strategic Exchange (HENSE) (2012) *Review of Medical and Dental School Intakes in England*. [online] Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/213236/medical-and-dental-school-intakes.pdf [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2006a) *NHS Staff - 1995-2005, Overview*. [online] Available at: www.hscic.gov.uk/searchcatalogue?productid=2009 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2006b) *NHS Staff - 1995-2005, General Practice*. [online] Available at: www.hscic.gov.uk/searchcatalogue?productid=2012 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2007) *GP Workload Survey Results*. [online] Available at: www.hscic.gov.uk/pubs/gpworkload [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2009) *Trends in Consultation Rates in General Practice – 1995-2009*. [online] Available at: www.hscic.gov.uk/pubs/gpcons95-09 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2010) *GP Practice Vacancies Survey 2010*. [online] Available at: www.hscic.gov.uk/searchcatalogue?productid=2299 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2012a) *NHS Staff 2001-2011, general practice*. [online] Available at: www.hscic.gov.uk/searchcatalogue?productid=4869 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2012b) *NHS Staff – 2001-2011 – Medical and dental*, [online] Available at: www.hscic.gov.uk/searchcatalogue?productid=4876 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2012c) *Hospital Episode Statistics for England. Main specialty by age group for all outpatient attendances: All, 2010-11*. [online] Available at: www.hscic.gov.uk/hes [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2012d), *GP earnings and Expenses – 2010-11 [NS]*, Accessed at www.hscic.gov.uk/catalogue/PUB07477 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2012e) *Hospital Episode Statistics: Admitted Patient Care 2011-12, Summary Report*. [online] Available at: www.hscic.gov.uk/hes [Accessed June 2013].

Health and Social Care Information Centre (HSCIC) (2013a) *NHS Staff – 2002-2012, General Practice*, Accessed at www.hscic.gov.uk/searchcatalogue?productid=10382 [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2013b) *Weighted capitation tables*, via email correspondence. [Accessed April 2013].

Health and Social Care Information Centre (HSCIC) (2013c) *How is Direct Patient Care defined?* [online] Available at: www.hscic.gov.uk/article/3811/How-is-Direct-Patient-Care-defined [Accessed October 2013].

Health and Social Care Information Centre (HSCIC) (2014) *General and Personal Medical Services, England - 2003-2013, As at 30 September.* Available at: www.hscic.gov.uk/catalogue/PUB13849 [Accessed March 2014].

Health Education England (HEE) (2013a) *Survey of Deanery data in Autumn 2012*. Unpublished. [Accessed February 2013].

Health Education England (HEE) (2013b) *Investing in People for Health and Healthcare – Workforce Plan for England: Proposed Education and Training Commissions for 2014/15*. [online] Available at: nw.hee.nhs.uk/files/2013/12/People-for-Health-and-Healthcare-Workforce-Plan-for-England-201415.pdf [Accessed December 2013].

Ipsos MORI (2013) *The GP Patient Survey: July 2012 – March 2013, Summary Report*. [online] Available at: www.gp-patient.co.uk/results/latest_weighted/summary [Accessed September 2013].

The King's Fund (2011) *Improving the quality of care in general practice: report of an independent enquiry commissioned by the King's Fund*. [online] Available at: www.kingsfund.org.uk/publications/ improving-quality-care-general-practice [Accessed February 2013].

The King's Fund (2012) *Improving GP services in England: exploring the association between quality of care and the experience of patients.* [online] Available at: www.kingsfund.org.uk/sites/files/kf/field /field_publication_file/improving-gp-services-in-england-the-kings-fund-nov-2012.pdf [Accessed January 2013].

The Marmot Review (2010) *Fair Society, Healthy Lives*, Institute of Health Equity. [online] Available at: www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review/fair-society-healthy-lives-full-report [Accessed September 2013].

Medical Schools Council (2013) *Staffing levels of Medical Clinical Academics in UK Medical Schools, 2012 data.* [online] Available at: www.medschools.ac.uk/Publications/Pages/ClinicalAcademicStaffSurvey2013.aspx [Accessed September 2013].

Mittman DE, Cawley JF, Fenn WH. (2002) *Physician assistants in the United States*. British Medical Journal, 325, pp485–7.

Moretti C, Carne A, and Bywood P. (2010) *Summary Data Report of the 2008-2009 Annual Survey of Divisions of General Practice.* Adelaide: Primary Health Care Research and Information Service, Discipline of General Practice, Flinders University.

Morris, S., Sutton, M. and Gravelle, H. (2003) *An analysis of the factors predicting GP consultations: A small-area level analysis using Health Survey for England data*, Resource Allocation Research Papers No. 28, Department of Health. [online]. Available at: webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_089608.pdf [Accessed November 2013].

National Advisory Group on Patient Safety (NAGPS) (2013) *A promise to learn – a commitment to act: improving the safety of patients in England*. [online] Available at: www.gov.uk/government/ publications/berwick-review-into-patient-safety [Accessed September 2013].

National Audit Office (NAO) (2010) *Tackling Inequalities in Life Expectancy in Areas with the Worst Health and Deprivation*. London: The Stationery Office. [online] Available at: www.nao.org.uk/report/tackling-inequalities-in-life-expectancy-in-areas-with-the-worst-health-and-deprivation/ [Accessed September 2013].

National Association of Sessional GPs (NASGP) (2008) *"...excluding locums".* Available at: www.nasgp.org.uk/download/locumnumbers/nasgp_how_many_gp_locums_in_UK.pdf [Accessed July 2013].

NHS England (2013a) *Have your say on the narrative for person-centred, coordinated care.* [online] Available at: www.england.nhs.uk/2013/02/19/integrated-care/ [Accessed February 2013].

NHS England (2013b) *Transforming urgent and emergency care services in England: Appendix 1 – Revised Evidence Base from the Urgent and Emergency Care Review.* [online] Available at: www.nhs.uk/NHSEngland/keogh-review/Documents/UECR.Ph1Report.Appendix%201.EvBase.FV.pdf [Accessed November 2013].

NHS England (2014) *Improving General Practice: A call to action – Phase one report.* [online] Available at: www.england.nhs.uk/wp-content/uploads/2014/03/emerging-findings-rep.pdf [Accessed March 2014].

National Institute for Health Research (NIHR) (2013) *Research Programmes*. [online] Available at: www.nihr.ac.uk/research/Pages/programmes_research_programmes.aspx [Accessed April 2013].

NHS North West London (2012) *From Good to Great: A workforce strategy to support out-of-hospital care in North West London*. (URL not available).

Nuffield Trust (2013) *Reclaiming a population health perspective: Future challenges for primary care.* Research report. [online] Available at: www.nuffieldtrust.org.uk/sites/files/nuffield/publication/130425_ reclaiming-a-population-health-perspective.pdf [Accessed April 2013].

Office for Budget Responsibility (OBR) (2012) *Fiscal sustainability report, July 2012*. [online] Available at: budgetresponsibility.independent.gov.uk/fiscal-sustainability-report-july-2012/ [Accessed July 2012].

Office for Budget Responsibility (OBR) (2013) *Fiscal sustainability report, July 2013*. [online] Available at: budgetresponsibility.independent.gov.uk/fiscal-sustainability-report-july-2013/ [Accessed July 2013].

Office for National Statistics (ONS) (2010) *Rural/urban Local Authority (LA) Classification (England) - Primary Care Organisation Classification* [online] Available at www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/rural-urban-definition-and-la/rural-urban-local-authority--la--classification--england-/index.html [Accessed April 2013].

Office for National Statistics (ONS) (2011) *Table A3-4, Principal projection - England population single year of age, 2010-based*. [online] Available at: www.ons.gov.uk/ons/rel/npp/national-population-projections/2010-based-projections/index.html [Accessed March 2012].

Office for National Statistics (ONS) (2012a) *Population Estimates for UK, England and Wales, Scotland and Northern Ireland, Population Timeseries 1971 to Current Year*. [online] Available at: www.ons.gov.uk/

ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/population-estimates-timeseries-1971-to-current-year/index.html [Accessed February 2013].

Office for National Statistics (ONS) (2012b) 2011 *Census, Population and Household Estimates for the United Kingdom*. [online] Available at: www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-270247 [Accessed February 2013].

Office for National Statistics (ONS) (2012c) *Public Service Productivity Estimates: Healthcare, 2010*. [online] Available at: www.ons.gov.uk/ons/rel/psa/public-sector-productivity-estimates--healthcare/ 2010/art-healthcare.html [Accessed December 2012].

Office for National Statistics (ONS) (2013a) *Table A1-4, Principal Projection - England Summary, 2012-based*. [online] Available at: www.ons.gov.uk/ons/rel/npp/national-population-projections/ 2012-based-projections/index.html [Accessed November 2013].

Office for National Statistics (ONS) (2013b) *Table A3-4, Principal projection - England population single year of age, 2012-based*. [online] Available at: www.ons.gov.uk/ons/rel/npp/national-population-projections/2012-based-projections/index.html [Accessed November 2013].

Office for National Statistics (ONS) (2013c) *Population Estimates for UK, England and Wales, Scotland and Northern Ireland, Mid-2001 to Mid-2010 Revised*. [online] Available at: www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/mid-2001-to-mid-2010-revised/index.html [Accessed December 2013].

Parle, J. Ross, N (2012) *Briefing document on Physician Assistants/Associates for HEE*, (unpublished), via correspondence.

Patterson, F. (2012) *A job analysis of the GP role: Implications for selection, training and careers*. Paper to the RCGP Annual Primary Care Conference, Glasgow, 6 October 2012.

Patterson, F. Tavabie, A. Denney, ML. Kerrin, M. Ashworth, V. Koczwara, A. MacLeod, S. (2013) *A new competency model for general practice: implications for selection, training and careers*. The British Journal of General Practice, 63:610, pp331-338.

Porter, M. (1985) *Competitive Advantage.* Free Press, New York.

Ritsema, T S, **Paterson, K** (2012) *Results of the Second Annual UK Physician Assistant Census for the UK Association of Physician Assistants*, UK Association of Physician Associates, London.

Royal College of General Practitioners (RCGP) (2011) *Review of Out-of-Hours (OOH) Training for GP Specialty Trainees* [online] Available at www.rcgp.org.uk/policy/rcgp-policy-areas/out-of-hours-review.aspx [Accessed April 2013].

Royal College of General Practitioners (RCGP) (2012) *Patients, doctors and the NHS in 2022: Compendium of evidence.* [online] Available at: www.rcgp.org.uk/policy/rcgp-policy-areas/general-practice-2022.aspx [Accessed October 2012].

Royal College of General Practitioners (RCGP) (2013) *The 2022 GP: A Vision for General Practice in the Future NHS.* London, RCGP. Available at: www.rcgp.org.uk/gp2022 [Accessed May 2013].

Royal College of Physicians (2009). *Women and medicine: the future*. [online] Available at: www.rcpch.ac.uk/news/royal-college-physicians-launches-women-and-medicine-future-report-03-june-2009 [accessed February 2014].

Sibbald, B. (2005) *Putting General Practitioners where they are needed: an overview of strategies to correct maldistribution*. National Primary Care Research and Development Centre, University of Manchester. [online] Available at: www.medicine.manchester.ac.uk/primarycare/npcrdc-archive/archive/PublicationDetail.cfm/ID/139.htm [Accessed February 2013].

Simon, C. (2008) *Overview of the GP Contract*. InnovAIT. 1:2, 134-139.

Smith B, Bywood P. (2012) *RESEARCH ROUNDup: What influence will GP Super Clinics have on PHC in Australia?* Adelaide: PHC RIS, Issue 23, December. Available at: www.phcris.org.au/publications/researchroundup/issues/23.php [Accessed September 2013].

Disclaimer

The Centre for Workforce Intelligence (**CfWI**) is an independent agency working on specific projects for the Department of Health and is an operating unit within Mouchel Management Consulting Limited.

This report is prepared solely for the Department of Health by Mouchel Management Consulting Limited, in its role as operator of the CfWI, for the purpose identified in the report. It may not be used or relied on by any other person, or by the Department of Health in relation to any other matters not covered specifically by the scope of this report.

Mouchel Management Consulting Ltd has exercised reasonable skill, care and diligence in the compilation of the report and Mouchel Management Consulting Ltd only liability shall be to the Department of Health and only to the extent that it has failed to exercise reasonable skill, care and diligence. Any publication or public dissemination of this report, including the publication of the report on the CfWI website or otherwise, is for information purposes only and cannot be relied upon by any other person.

In producing the report, Mouchel Management Consulting Ltd obtains and uses information and data from third party sources and cannot guarantee the accuracy of such data. The report also contains projections, which are subjective in nature and constitute Mouchel Management Consulting Ltd's opinion as to likely future trends or events based on i) the information known to Mouchel Management Consulting Ltd at the time the report was prepared; and ii) the data that it has collected from third parties.

Other than exercising reasonable skill, care and diligence in the preparation of this report, Mouchel Management Consulting Ltd does not provide any other warranty whatsoever in relation to the report, whether express or implied, including in relation to the accuracy of any third party data used by Mouchel Management Consulting Ltd in the report and in relation to the accuracy, completeness or fitness for any particular purposes of any projections contained within the report.

Mouchel Management Consulting Ltd shall not be liable to any person in contract, tort (including negligence), or otherwise for any damage or loss whatsoever which may arise either directly or indirectly, including in relation to any errors in forecasts, speculations or analyses, or in relation to the use of third party information or data in this report. For the avoidance of doubt, nothing in this disclaimer shall be construed so as to exclude Mouchel Management Consulting Ltd’s liability for fraud or fraudulent misrepresentation.

The CfWI produces quality intelligence to inform better workforce planning that improves people's lives

CENTRE FOR WORKFORCE INTELLIGENCE

Centre for Workforce Intelligence
209-215 Blackfriars Road
London SE1 8NL

T +44 (0)20 7803 2707
E enquiries@cfwi.org.uk

www.cfwi.org.uk