CENTRE FOR WORKFORCE INTELLIGENCE

In-depth review of the acute medical care workforce

Final report

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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 acute medical care workforce in England. The review covered all fully trained physicians who contribute to acute medical care including, acute medicine specialists, geriatricians, and physicians from a number of other specialties. The CfWI analysis focused on doctors with a certificate of completion of training ('CCT holders') or equivalent. Typically these specialists are employed in the NHS as consultants.

The CfWI looked ahead 20 years to 2033 to assess whether, under a range of plausible future scenarios, there is likely to be a balance between patient/service demand and supply of CCT holders. The CfWI's projections show there is considerable uncertainty about both demand and supply, leading to a suggestion of no change to current acute medicine training numbers until more information is available.

The key benefits of this work are to:

- support longer-term workforce planning on issues relating to this workforce, up to 2033
- support robust decision-making, taking account of future uncertainties
- help decision-makers be more alert to the emerging risks to this workforce as the future unfolds.

Context and explanation of key terms

'Acute medical care' is a branch of secondary healthcare in which a patient receives active but relatively short-term care for an episode of acute medical illness or an urgent medical condition. This care generally comprises the first assessment of an acutely ill patient including initial supportive treatment, relevant diagnostic tests, diagnosis, assessment of the severity of the illness and initial treatment, which may include referral to more specialist services including, on occasion, surgical services. The quality of this initial, acute medical care is an important determinant of clinical outcomes.

Acute medical care is generally considered to last for the first 48 to 72 hours of a patient's admission to hospital with an acute medical condition, or a shorter period should the patient be discharged or die. Such services are generally, but not exclusively, delivered in Acute Medical (admissions) Units (AMUs) or Emergency Medical (admissions) Units (EMUs). The CfWI identified a wide range of names for such units during the course of this review and a configuration of services that also varied, but to a lesser extent. The daily patient intake to such a unit is colloquially referred to as 'the acute take', so we have used this terminology in this report.

Acute medical care is provided by doctors from several medical specialties (sometimes called 'physicianly specialties'), as discussed in this report. Units providing acute medical care generally have key interfaces with emergency medicine (A&E) and critical care (including intensive care) facilities.

During the course of this review the CfWI identified acute medical care specialist services that may have important workforce implications in the medium to longer term. These include not only the almost universal provision of coronary care services (for suspected myocardial infarction and other critical cardiological conditions) but also, for example, specialist stroke services and those for acute gastrointestinal haemorrhage. The medium to longer term impact of these developing services on workforce demand and supply in acute medical care has not been possible to estimate in this report as such services are far from universal and their actual configuration is highly variable. The CfWI believes these services will require additional attention over the next five years or so, as data becomes available, as they have the potential to impact significantly on the

acute medical care workforce and on demand for undifferentiated acute medical care services. Some of these points are picked up in the future participation rate estimates made by the expert panel (see Section 6).

The CfWI approach

For this review, we drew on the expertise of more than 70 stakeholders including those who participated in horizon scanning, scenario generation and elicitation workshops. The CfWI engagement was complemented by desk research. For previous recommendations by the CfWI about this workforce, please see section 1.3 of the report.

Key research findings

- The groups of doctors which contribute most to acute medical care and which, therefore, are included in the CfWI modelling are:
    - Acute medicine specialists (single CCT holders) – *note that this is a relatively new specialty*
    - Geriatricians (the majority of whom are dual CCT holders)
    - Other specialists, such as:
        - Acute medicine with general internal medicine (GIM) (dual CCT holders)
        - Doctors with a CCT in another 'physicianly specialty', who also hold a GIM CCT.

- The new acute medicine specialty has grown rapidly from 44 to 125 (headcount) consultants between 2011 and 2013. Acute medicine became a speciality in its own right in 2009; prior to this acute medicine was a sub-specialty of general internal medicine (GIM). The Health and Social Care Information Centre (HSCIC) started recording acute medical care data in 2011. In 2013 there were also 894 doctors with a CCT in GIM and 1,094 geriatric medicine Consultants.

- In 2013-14 there were 68 accepted offers by trainees for acute medicine specialty training level 3 (ST3) posts. This represented an increase from 44 recruits in 2010-11. The results of the Royal College of Physicians (RCP) 2011 census (RCP, 2011) showed that the new acute medicine speciality found it difficult to recruit. The main reasons for this, according to doctors-in-training, were perceptions about work-life balance and the content of the job as a consultant.

- Several specialties currently contribute to the provision of acute medical care. The three specialties that contribute the most service to acute medical care – besides acute medicine and geriatric medicine – are gastroenterology, diabetes and endocrinology, and respiratory medicine. CfWI modelling estimates that there are currently around 840 (headcount) CCT holders from other specialties who contribute to acute medical care. **However, a CfWI elicitation workshop with a panel of subject matter experts stated that the contributions of these three specialties to undifferentiated acute medical care are likely to reduce slightly over the next 20 years 2013 to 2033 due to rising demand for their specialist services.**

- General internal medicine (including acute medicine) and geriatric medicine 'finished consultant episodes' (FCEs) have risen on average by 3 per cent and 4.7 per cent respectively between 2003 and

2011. Between 2011 and 2013, FCE categorisations changed and acute medicine was separated from GIM. Acute medicine FCEs have risen between 2011 and 2013.

CfWI modelling results

The CfWI was commissioned to determine the supply of CCT holders, or equivalent, needed to provide the same level of acute medical care by 2033, per capita, as today. With this in mind, the CfWI has modelled both baseline (nothing changes) and scenario-specific projections of future demand and supply for this workforce. The CfWI modelling projects the acute medical care CCT holder workforce over 20 years to 2033.

These projections, along with other evidence and intelligence, help us determine whether there is likely to be sufficient supply of CCT holders, or equivalent, to provide the same level of service as today, and to understand whether future workforce supply is likely to be in line with expected patient demand. Baseline assumptions are composite estimates of the future contributions to hospital-based acute medical care of acute medics, dual CCT holders in general internal medicine (G(I)M), geriatricians and other contributing physicians.

Baseline projections of demand and supply

Baseline projections are useful for comparison purposes.

'Baseline' demand for CCT holders who provide acute medical care – which reflects the effects of population growth and ageing and standard productivity assumption used by the CfWI but not an increase in average individual patient need – is projected to increase by 20 per cent from 1,054 in 2013 to 1,265 FTE in 2033.

The 'baseline' supply of CCT holders is projected to increase by 97 per cent from 1,165 in 2013 to 2,300 FTE in 2033. This represents workforce supply projections based on current conditions, with no changes to trainee intake or other supply variables. The majority of the increase comes from the growth of the new acute medicine specialty. It is important to note here that the supply of doctors to provide acute medical care can, to a significant extent, be flexed by employers increasing or decreasing the amount of time dual-accredited medical specialties contribute to acute rotas.

CfWI baseline demand and supply projections indicate that while total workforce supply for acute medical care could potentially outstrip baseline demand over the period, it will be important to continue to expand the new acute medicine specialty for the time-being. This is important both due to the uncertainty about the pace of growth in future service demand and due to the risk of a reduction in the contributions to acute medical care of other 'physicianly specialties'.

When forecasting demand the CfWI is commissioned to estimate the workforce needed in future to maintain current levels of care per patient. The CfWI recognises there is always likely to be some unmet need in any health system.

Scenario projections of demand and supply

Stakeholders helped us identify the potential challenges, developments and opportunities which could influence future demand for and planning of this workforce. They helped develop four challenging but plausible scenarios, illustrated in Table 1 below, which we modelled to show how demand and supply for acute medical care may vary across a range of futures. We also worked with stakeholders to understand the

impact of certain policies and to explore options for bringing supply and demand into balance over the period up to 2033.

Table 1: Highest-impact, highest-uncertainty 'clusters' (high level factors) chosen during the scenario generation process

		'Cluster A'		'Cluster F'	
		Imbalance of acute and elective care	Balance of acute and elective care	Fragmentation of health and social care	Integration of health and social care
'Cluster J'	Increase in generalism	**N/A**	**Scenario 4**	**N/A**	**Scenario 3**
	Decrease in generalism	**Scenario 1**	**N/A**	**Scenario 2**	**N/A**

Source: CfWI scenario generation workshop, September 2013

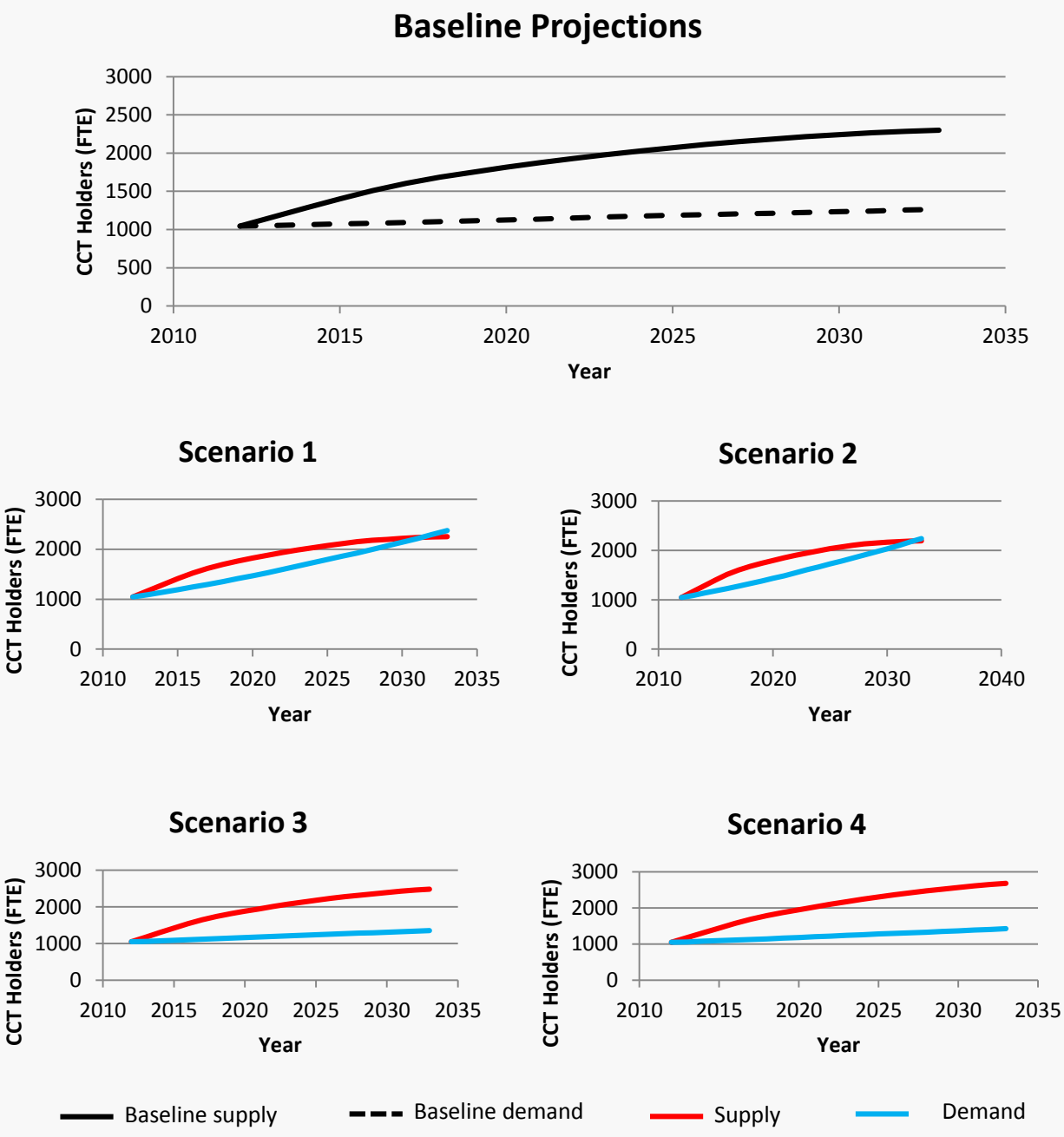
The four scenarios shown in Table 1 are summarised in the section below, with more details provided in Annex C. These driving forces, clusters and scenarios were developed by a group of expert stakeholders via a tried-and-tested workshop process. They do not, therefore, represent the views of any single organisation such as the CfWI, the DH, HEE, or any professional body, or any of the individual workshop participants.

Stakeholders helped us to quantify the impact of the four scenarios on demand and supply. As Figure 1 indicates, in two of the four scenarios workforce supply outstrips expected patient demand over the projection period, while for the other two scenarios demand and supply are broadly in balance.

This suggests that **although there is a risk of workforce oversupply over the medium term, a demand-supply imbalance is by no means certain.** Much will depend on trends in patient need and demand, and the future contribution to acute medical care of geriatricians and physicians from other medical specialties.

Note that the reason all demand and supply projections start at the same point is that the CfWI is forecasting the workforce needed to provide the same level of service per patient as today; it is likely there will always be some level of 'unmet need' in any health system.

Figure 1: Demand vs. supply projections for CCT holders who provide acute medical care



Source: CfWI system dynamics model of the acute medical care workforce for England

As the acute medical care workforce includes a large proportion of dual-accredited physicians it can effectively be adjusted up or down by increasing or decreasing the amount of time specialists (e.g. gastroenterologists) spend providing undifferentiated acute medical care, as opposed to their specialist services.

CfWI modelling results highlight the inherent flexibility in the national workforce available to deliver acute medical care, however we recognise that at a local level there may not be the same flexibility. For example, a large hospital with an acute ward may be able to provide more acute medical care with acute medicine CCT holders and be less reliant upon physicians from other specialties.

CfWI suggestions and next steps

Based on the findings of this in-depth review the CfWI makes the following suggestions to help balance patient/service demand and workforce supply in the future:

The CfWI suggests that Health Education England continues to fill the current number of higher specialty trainee (ST3) posts for the new acute medicine specialty for the time being, to minimise the risk of undersupply of acute medics.

There is a growing supply of CCT holders in the new acute medicine specialty. However, at present and for the medium term, acute medical care is reliant upon significant service contributions from geriatricians and physicians from other medical specialties to provide a comprehensive 24/7 acute medical care service.

It should however be noted that if employers were to reduce the contributions of dual-accredited physicians to acute medical care it would likely be difficult to reverse such arrangements without the provision of significant re-training, as acute medical skills atrophy quickly without regular use.

The CfWI suggests HEE considers revisiting acute medicine training levels in three years' time.

The acute medicine specialty is relatively new. In light of the uncertainty – described in this report – surrounding both demand and supply for CCT holders able to provide acute medical care, it would be appropriate to review the number of postgraduate medical training posts in acute medicine in three years' time. A further review will determine whether training numbers are at the appropriate level relative to trends in acute medical care service activity and patient demand given the changing contributions of other specialties to acute medical rotas.

The CfWI suggests HEE considers a workforce review of core medical training be undertaken in the next two to three years.

Further workforce reviews might reasonably be undertaken in the next two to three years as there have recently been many changes in the flows of trainees through the core medical training (CMT) and acute care common stem (ACCS) training pathways. These changes impact the outflows into higher specialty training (HST) in the majority of 'physicianly specialties' with or without a second CCT programme in G(I)M. It will be important to monitor how changes in emergency and acute specialty training impact on other medical specialties.

The CfWI suggests HEE considers workforce reviews of both geriatric medicine and gastroenterology.

Further workforce reviews could be undertaken in the next two to three years to build understanding of the supply of geriatricians to serve an increasing number of people aged over 70, and also the supply of gastroenterologists. Both specialties are key contributors to acute medical care. The role of geriatricians may also change to increase community-based support and integrated care, and this may limit their availability for the provision of secondary care facility-based acute medical care.

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

The CfWI welcomes all responses to this report. Comments can be submitted on the CfWI website and the project team can be contacted at: medical@cfwi.org.uk.

1. Introduction

1.1 About this review

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 acute medical care workforce in England. The review covered all fully trained physicians who contribute to acute medical care including acute medicine specialists, geriatricians, and physicians from a number of other specialties. The CfWI analysis focused on doctors with a certificate of completion of training ('CCT holders') or equivalent. Typically these specialists are employed in the NHS as consultants.

We looked ahead 20 years to 2033 to assess whether, under a range of plausible future scenarios, there is likely to be a balance between patient/service demand and supply of CCT holders. CfWI projections show there is considerable uncertainty about both demand and supply, leading us to suggest no change to current acute medicine training numbers until more information is available.

The key benefits of this work are to:

- support longer-term workforce planning on issues relating to this workforce, up to 2033
- support robust decision-making, taking account of future uncertainties
- help decision-makers be more alert to the emerging risks to this workforce as the future unfolds.

Objectives

This in-depth workforce review had the following objectives, to:

1. identify key drivers of demand and supply for acute medical care, focusing on high impact, high uncertainty drivers that may have an impact in the next 20 years (2013 to 2033)
2. model current and forecast demand and supply for acute medical care
3. review workforce capacity and workload issues
4. consider different service delivery models/patient pathways and their workforce implications
5. consider the interactions between acute medicine, geriatric medicine, emergency medicine and other 'physicianly specialties'
6. make suggestions for workforce planning, including training numbers.

1.2 Stakeholder engagement

The CfWI approach involved extensive stakeholder engagement with a broad range of professional representatives with specialist perspectives on the hospital-based acute medical care workforce, including the Royal College of Physicians (RCP) and the Society for Acute Medicine (SAM). This engagement was both to improve the quality and credibility of the CfWI's approach and to improve stakeholders understanding of the intelligence contained in this review and its potential to support decision-making and future workforce reviews.

Information provided by these stakeholders is used throughout the report, and the report includes perspectives and analysis that can be derived from available data.

We would like to thank all the stakeholders for their contributions, whilst also noting that the CfWI's conclusions and suggestions may not necessarily reflect those of the individuals and organisations consulted. For a full list of the stakeholders involved at each stage of this project, please refer to **Annex A**.

1.3 Previous CfWI findings

This report builds on the previous CfWI review of general and acute internal medicine (CfWI, 2011), which made recommendations for national training numbers (NTNs) and concluded:

> ***"The CfWI recommends that as existing supply is providing growth in this specialty and that the shift of care closer to home and the impact of QIPP [Quality, Innovation, Productivity and Prevention] is not yet quantified, no changes are to be made at this time to the number of training places or their current geographical location."***

The consequence of the recommendation for 'no change' has been continued substantial growth in the acute medicine specialty due to the small numbers of CCT holders in this workforce and the natural expansion of a new specialty. However, the report also concluded that the data was insufficient to determine the total numbers of acute medical care CCT holders and general internal medicine CCT holders. This led to the following recommendation:

> ***"The CfWI recommends a deeper review in 2012 to look at the interplay between specialties within the medicine group."***

Since then there has remained uncertainty about the relative contribution to the acute medical 'take' of physicians in other specialties, which continues to be needed whilst new CCT holders emerge as acute medicine specialists.

2. Context

2.1 About the workforce

Historically the expectation of all physicians was to be competent in the management of all common medical disorders, and, therefore, to be regarded as general physicians. In the 1970s the formalisation of post-registration medical training specifically defined specialty training. This resulted in the many clinicians developing their expertise in specific medical subjects, the subsequent creation of specialties, and related specialist societies.

Acute medicine was previously a sub-speciality of general internal medicine (GIM) and only became a speciality in its own right in 2008/09. As a result, the particular contribution of specialist physicians to the specialty varies considerably by NHS Trust and is determined by a number of independent factors that are often unique to a particular Trust or geography. This makes the planning of appropriate levels of workforce supply considerably more complicated.

The groups of doctors which contribute most to acute medical care and which, therefore, are included in CfWI modelling are:

- Acute medicine specialists (single CCT holders) – *note that this is a relatively new specialty*
- Geriatricians (the majority of whom are dual CCT holders)
- Other specialists, such as:
  - Acute medicine with general internal medicine (GIM) (dual CCT holders)
  - Doctors with a CCT in another 'physicianly specialty', who also hold a GIM CCT.

As Table 2 shows, amongst the physicians from other specialities the leading contributors to acute medical care are gastroenterology, diabetes and endocrinology, and respiratory medicine, followed by cardiology, renal medicine and rheumatology.

Table 2: Proportion of time specialties contribute to acute medical care

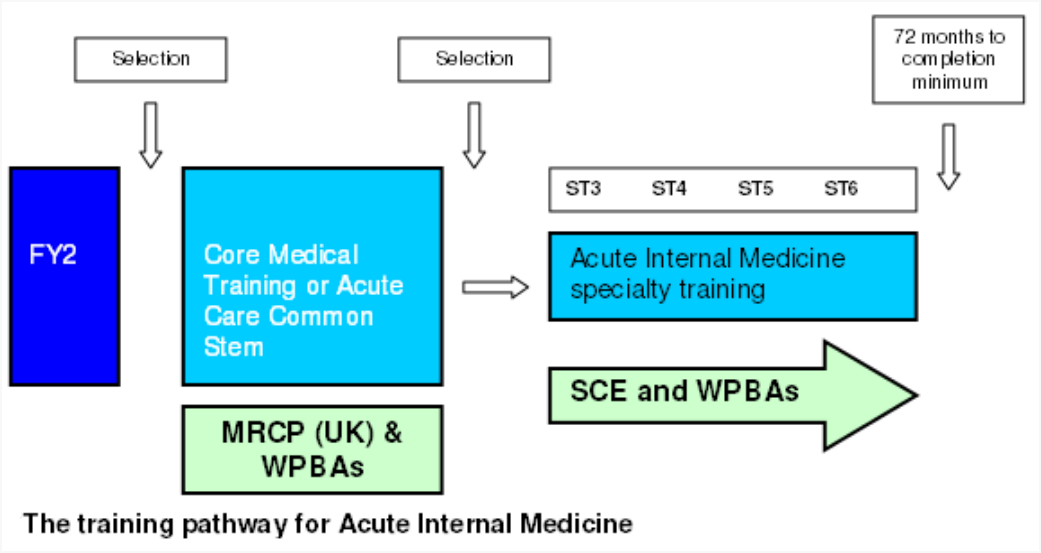
Specialty	Total number of Consultants	Proportion of acute work accounted to each specialty	Acute contribution by rank
Gastroenterology	940	10.3%	1st
Endocrinology and diabetes mellitus	560	9.6%	2nd
Respiratory medicine	789	9.0%	3rd
Cardiology	1,063	4.5%	4th
Renal medicine	470	3.8%	5th
Rheumatology	562	2.4%	6th

Source: HSCIC 2014b, CfWI modelling using HSCIC 2014 and Royal College of Physicians census (2011),

2.2 Training pathways

Prior to 2007 a set of recommendations existed in terms of a curricula for acute medicine. Between 2007 and 2009, acute medicine was a sub-specialty of GIM. This means that those who trained in acute medicine and are practising AIM today could have experienced one of a number of curricula – each with slightly different regulations and training requirements. When acute medicine was endorsed as a specialty in 2009 the Joint Royal Colleges of Physicians Training Board (JRCPTB) established a standardised four-year training programme (Figure 2). To be eligible for this four-year post-graduate specialty training course, applicants had to have successfully completed either core medical training (CMT) or the acute care common stem (ACCS) training (JRCPTB, 2012). The CMT programme usually lasts two years (full time equivalent – FTE) whilst the ACCS programme lasts three (FTE).

Figure 2: The training pathway of acute internal medicine



Source: Joint Royal Colleges of Physicians Training Board
Foundation year (FY)
Member of the Royal College of Physicians (MRCP)
Work place based assessment (WPBAs)
Specialty certificate examination (SCE)

The *Future Hospital Commission* report (RCP, 2013) emphasises the importance of acute and GIM in the curriculum of undergraduate training at medical school. The report recommends that to meet the needs of patients across the wider healthcare system, community placements for medical students and trainees will be required and a broad-based training programme might include acute and/or GIM, community care, mental health and general practice. The report states that consideration should be given to community care rotations, supervised by specialists, and that these could prove useful for trainees and have material benefits for patients; though it suggests that these might be more usefully implemented later in specialty training (RCP, 2013).

The RCP report states it would be desirable if there were extended clinical placements under the umbrella of generalism and both hospital and community practice (including primary care) at the undergraduate level and that these should be included in the third year of five years at medical school or in the second year of graduate entry programmes (GEM).

The report emphasises that the current expectation – that most physicians become highly specialised in a narrow field at an early stage in their medical career – must change. The RCP report suggests expansion in the short term, of existing training opportunities in acute and GIM, as there will be a requirement for all medical students to increase participation in service provision and education in acute and/or GIM. In the longer term, the RCP report recommends that the option of a CCT in general internal medicine should be explored. This would involve a remodelled training pathway in which all trainees focus either on acute medicine or GIM

before further specialisation occurs (RCP, 2013); this subsequent specialisation being covered by an additional credentialing process.

2.3 Multi-disciplinary teams

The *Future Hospital Commission* report states that 'greater collaboration and integration' across professions and care settings will benefit patients with complex and multiple conditions, older patients with frailty and dementia and those with long term conditions (RCP, 2013).

This could provide acutely ill patients with a smoother patient journey, less fragmentation of care and a possible reduction in hospital re-admissions (the so-called 'rotating door' phenomenon). There is evidence from a recent review by The King's Fund (King's Fund, 2012) that integrating primary and social care can reduce admission rates but other studies have not confirmed this finding.

The RCP's *Acute care toolkit 4: Delivering a 12-hour, 7-day consultant presence on the acute medical unit* presence (RCP, 2012b), states the numbers of consultants required to deliver 24 hour consultant presence on an AMU will depend on:

- the size and structure of the unit,
- the patient illness acuity, and
- the number of patient contacts on a daily basis.

Integrated working arrangements combining acute medicine CCT holders with specialty/general physicians has the potential to help achieve sustainable consultant rotas, optimise continuity, and ensure high-quality patient care. It also states that the optimal benefit from a 12/7 consultant presence on an acute medical unit (AMU) will only be fully realised if appropriate support and diagnostic services are provided at the same time (RCP, 2012b).

The quality standards for AMUs (WMQRS, 2012) state that staffing should include:

- A nominated lead consultant and a nominated lead nurse who is responsible for ensuring the quality standards for care delivery and outcomes are met in the AMU.
- Senior decision makers such as doctors trained in GIM or AIM.
- A consultant trained in GIM or AIM who should be on call at all times and is able to reach the unit in a maximum of 30 minutes.
- Competent clinical decision makers such as doctors-in-training (foundation year 2 or consultant trained years 1-3).
- Nurse practitioners or other practitioners (for example, physician associates).
- Health support workers and healthcare professionals with relevant competencies for the work they cover in the unit.

The standards also state that available support services should include laboratory and imaging services, other investigation services such as echocardiography, bronchoscopy and gastroscopy to be available at all times, as well as general surgery and mental health services and pharmaceutical services, together with support from relevant ancillary staff (WMQRS, 2012).

2.4 Key policy drivers

Mid Staffordshire NHS Trust Public Inquiry

The *Mid Staffordshire NHS Foundation Trust Public Inquiry final report* by Sir Robert Francis QC (Francis, 2013) was published in February 2013. This report made recommendations for the NHS and government in response to major concerns over mortality rates and standards of care. The major themes of the recommendations were to improve the safety and quality of patient care, embed the patient voice throughout the system, improve leadership and enable staff to raise the alarm when unsafe practice has taken place or is viewed as a significant risk (Francis, 2013). The findings and recommendations are likely to impact on the entire health system, including the provision of acute medical care.

The Shape of Training Review

The *Shape of Training review* (SOT) (Greenaway, 2014) was published in 2013 under the chairmanship of Sir David Greenaway. It gathered evidence and sought opinions from stakeholders to inform changes to the postgraduate specialty medical education and training arrangements to produce doctors who are adequately trained, able to provide safe and high-quality care, and meet the needs of patients and the service in the future. The review considered education and training, patient needs (present and future) and the balance between specialists and generalists. The key messages include: needing to meet the challenges presented by the growing number of older people across the UK, many with multiple conditions including dementia – hence postgraduate specialty training will have to train all doctors to provide care in community and acute care settings; all doctors must be able to manage acutely ill patients with multiple co-morbidities within their broad specialty area and, continue to maintain their skills in this area of generalist practice in the future (Greenaway, 2014).

Seven-day care

Acute medical illness is a seven-day problem – patients are just as likely to develop an acute medical illness requiring an emergency admission on a Saturday or Sunday as on a weekday (RCP, 2012b*). Acute care toolkit 4: Delivering a 12 hour, 7-day consultant presence on the acute medical unit* (RCP, 2012b) is part of a series of toolkits developed by the RCP in association with SAM. Toolkit 4 was developed as part of a response to evidence of poorer outcome for patients admitted at weekends than those admitted during weekdays; in particular, that patient mortality is higher at weekends. The toolkit recommends that a consultant physician – dedicated to the care of acutely medically ill patients – should be available on site to review patients for at least 12 hours a day, every day (RCP, 2012b).

Hospitals on the edge?

Following the inquiry into care at Mid Staffordshire NHS Foundation Trust and the Francis report (Francis, 2013), the RCP published *Hospitals on the edge?* (RCP, 2012c). The report provides an overview of the pressures and challenges on acute services. These include:

- increasing clinical demand

- changing patients, changing needs
- fractured care
- out of hours care breakdown
- impending workforce crisis in the medical workforce

The report calls for a review of the organisation of hospital care and states: 'Hospital services are one aspect of a continuum of care, involving general practice, social care, mental health services and the voluntary sector, among others. If we are to meet the challenges ahead, we must work collaboratively to revolutionise the way we organise and deliver care' (RCP, 2012).

Future Hospital Commission

The RCP established the *Future Hospital Commission* to review the design and delivery of inpatient hospital care in order to highlight measures that would improve the safety and quality of patient care, in response to the rising number of acute medical admissions, the ageing population and increasing frequency of complex co-morbidity. The report recommends that hospitals establish new structures, including:

- **a medical division** which will be responsible for all medical services across the hospital – from the emergency department and acute and intensive care beds, through to general and specialist wards;
- **acute care hubs** which will focus on patients likely to stay in hospital for less than 48 hours, and patients in need of enhanced, high dependency or intensive care. The hubs will have operational oversight provided by an acute care coordinator;
- **clinical co-ordination centres** that will support the acute care co-ordinators and will be the operational command centre for the hospital site and medical division, including medical teams working into the community.

The report emphasises a shift of focus towards the patients that form part of the ageing demographic and the need for a more generalist approach, and states: 'The importance of acute and (general) internal medicine must be emphasised from undergraduate [medical] training onwards, participation in (general) internal medicine training will be mandatory for those training in all medical specialties, and a more structured training programme for (general) internal medicine will be developed' (RCP, 2013).

3. CfWI methodology

3.1 The CfWI approach to workforce planning

To forecast and analyse future demand and supply for the acute medical care workforce – looking ahead to 2033 – the CfWI used its established robust workforce planning framework. This scenario-based approach (see Figure 3) involves:

- **Horizon scanning** – what are the future drivers of demand and supply?
- **Scenario generation** – what is the plausible range of future scenarios in which acute medical care may be provided, and in which consultants may work?
- **Workforce modelling** – how many acute medics and/or specialist physicians providing acute medical care are we on course to need and to have, and how might this vary across future scenarios?
- **Policy analysis** – what levers could the healthcare system bring to bear to align demand and supply more closely?

Figure 3: The CfWI workforce planning approach for in-depth reviews

Source: CfWI

Given the medium to long term outlook of this review, the key benefits of this approach are to:

- support long term planning
- account for the intrinsic uncertainty of the future
- alert decision-makers to emerging risks, as the future unfolds.

3.2 Horizon scanning

In September 2004, the Chief Scientific Adviser's Committee Office of Science and Technology (OST) defined horizon scanning 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'[1].

In June 2013, the CfWI interviewed 23 expert stakeholders by telephone and held a focus group with 20 participants to identify the driving forces that may impact the future demand and supply for the acute medical care workforce.

Specifically, the CfWI asked interviewees to consider the possible technological, economic, environmental, political, social (including education and training) and ethical (TEEPSE) influences on the following question:

Thinking up to the year 2033, what driving forces (both trends and uncertainties) may influence:

- **requirements of the future acute medical care workforce?**
- **future acute medical care workforce numbers and proportions?**

By way of example, the most frequently mentioned driving forces were:

technological: patients' self-management with improved technology and the potential impact of genomics on personalised treatment

economic: the NHS drive for efficiency and demand for improved access to mental health services in primary care set against a probably prolonged period of austerity in the wider public sector

environmental: changing demographic patterns and movement in population as people age

political: drive to reduce hospital admissions, and an increased demand for evidence-based practice linked to an expectation of improved patient outcomes

social: the future of acute medicine as a career and addressing the needs of an ageing population

ethical: the impact of dementia and other age-related disorders on mental health and physical health services, patient safety and an integrated approach to patient care

education and training: recruitment into the academic acute medical care workforce and the impact of revalidation on the quality of practice.

[1] This is a widely cited definition of horizon scanning for which, as noted by Miles and Saritas (2012), the original document is difficult to locate. A representative citation is on p.37 of the Government Office for Science (2011)

For the full list and explanation of horizon scanning drivers, please see the CfWI Horizon Scanning Hub at: http://www.horizonscanning.org.uk/projects/acute-medical-care/

3.3 Scenario generation

Following horizon scanning, the CfWI gathered 17 stakeholders to develop four challenging but plausible scenarios for the acute medical care workforce, looking ahead to 2033.

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, which can then 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 group these into 'clusters' or higher-level factors. A line can, therefore, be drawn from each of the driving forces identified at interview, through a narrative describing a sequence of events as they unfold to 2033 – referred to here as a 'cluster'.

The stakeholder group then evaluated each cluster, and rated the narratives for impact on (demand and/or supply for) the acute medical care workforce, and for uncertainty of outcome. Rating future events according to impact and uncertainty 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 should focus on those with the largest range of uncertainty and most significant consequences for the focal workforce. Stakeholders therefore identified those clusters which potentially have the highest impact and yet which are least predictable.

As a result of the iterative analytical process, three clusters were evaluated as having the greatest uncertainty and greatest impact. The stakeholders then combined these clusters (A, F and J) to produce four scenarios, each describing an intentionally challenging but plausible outcome for the acute medical care workforce by 2033, and the chain of events leading to that outcome. Scenario combinations that were considered less plausible were not considered.

Table 3 shows the clusters deemed by the participants to be of greatest uncertainty and greatest impact, combined to create the four scenarios.

Table 3: Four scenarios representing a range of challenging but plausible future for acute medical care

		Cluster A		**Cluster F**	
		Imbalance of acute and elective care	Balance of acute and elective care	Fragmentation of health and social care	Integration of health and social care
Cluster J	Increase in generalism	N/A	Scenario 4	N/A	Scenario 3
	Decrease in generalism	Scenario 1	N/A	Scenario 2	N/A

Source: CfWI scenario generation workshop
Please note: combinations of cluster A and J were deemed implausible by participants in the scenario generation workshop so two outcomes from cluster F were used to provide the additional scenarios.

> The four scenarios shown in Table 3 are outlined in more detail in Annex C. These driving forces, clusters and scenarios were developed by a range of expert stakeholders via a tried-and-tested process. They do not, therefore, represent the views of any single organisation such as the CfWI, the DH, HEE, or any professional body, or any of the individual workshop participants.

Two of the scenarios (1 and 2) describe a future in which there is failure to increase generalism in early training, an imbalance of acute and elective care and fragmentation between health and social care services. The other two scenarios (3 and 4) describe a future in which there is an increase in generalism in early training, balance between acute and elective care and integration between health and social care services. A number of pre-determined drivers – such as an ageing population – are features of all four scenarios.

3.4 Delphi panel exercise

The four scenarios were documented in narrative form. The next step was to quantify the scenarios for the purpose of modelling.

Delphi[2] is a systematic method of gaining consensus on a range of unknowable future variables. A total of 33 stakeholders, representing a cross-section of the acute medical care workforce and others from related professions, participated in two rounds of a Delphi panel exercise.

The CfWI team used an online survey to administer the Delphi questionnaire. During the first round, participants were first asked to re-read the four scenarios. The team then asked them to provide quantitative judgments about uncertain future variables, such as 'What do you think will be the average participation rate (full and part-time working) of acute medical care trained physicians (CCT holders) by 2033, by gender?'

Between the first and second rounds of Delphi, participants received the anonymised judgments and linked rationales of the other panellists. During the second round, participants were asked to consider revising their initial predictions based on the reasoning of the other panellists. After the second round, median scores were calculated and used as inputs to the 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 retirement age and future changes in participation rate) remain uncertain by their very nature, and become more so the further into the future one attempts to look. 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 2033. It is not possible to predict the future with certainty, which is why the CfWI uses a scenario-based approach, to bound this uncertainty and identify plausible future conditions.

[2] For more detailed reports on the methodology used by the CfWI, refer to the technical papers series found at: www.cfwi.org.uk/our-work/research-development/cfwi-technical-paper-series

3.5 Workforce modelling

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

- **'facts'** – baseline data to populate the model, such as current training and workforce numbers
- **assumptions we made** – predictable trends and assumptions made 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 by the Delphi panel
- **parameters that can be controlled** – parameters that policymakers can use to adjust demand and supply so that they are in balance.

The purpose of the CfWI's workforce modelling for this project was to forecast demand and supply for acute medical care CCT holders in a range of intentionally challenging but plausible futures. The demand modelling uses a framework from a Canadian research programme on health human resources (Birch, et al., 2007). The framework separates out four key elements of demand:

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

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

System dynamics modelling makes extensive use of simulation. It represents changes to a system over time by using the analogy of flows of stocks (for example: 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. See Annex B for the key data sources and modelling assumptions in the acute care workforce supply model.

The CfWI chose Vensim DSS©[3] to model the complex flows of acute medical care training and workforce in order to forecast the future demand and supply of acute medical care CCT holders. The software is able to handle the complexity of modelling supply, including the ageing of the workforce, and also provides a sophisticated uncertainty and sensitivity analysis function (CfWI, 2014); an important feature given the variable quality of data and assumptions available. The CfWI formally tested and validated the model – using software development methods – to ensure reliability.

[3] For more detailed reports on the methodology used by the CfWI, refer to the technical papers series found at: www.cfwi.org.uk/our-work/research-development/cfwi-technical-paper-series

4. The current workforce

4.1 Workforce trends in acute medicine

Current workforce numbers

The Health and Social Care Information Centre (HSCIC) began recording distinct data for the provision of acute medical care by acute medicine CCT holders in 2011. This means there is only three years worth of data concerning this aspect of acute medical care provision. In 2013, there were 125 (headcount) acute medicine consultants (HSCIC, 2014b). This had risen from 44 consultants in 2011.

Table 4 shows the headcount of specialists with a dual CCT in GIM and geriatric medicine consultants as they are the major providers of acute medical care service. This service provision is likely to continue while the number of acute medicine consultants grows to a self-sustaining level.

Table 4: Number of consultants in acute medice, GIM and geriatric medicine in 2013

Number of consultants	Headcount	FTE	Average participation rate	Proportion of time spent contributing to acute rota*	Estimated headcount contribution to Acute	Estimated FTE contribution to Acute
Acute medicine	125	121	96.8%	100.0%	125	121
GIM	894	801	89.6%	38.9%	348	312
Geriatric medicine	1,108	1,058	95.5%	15.5%	172	164

Source: HSCIC, 2014b

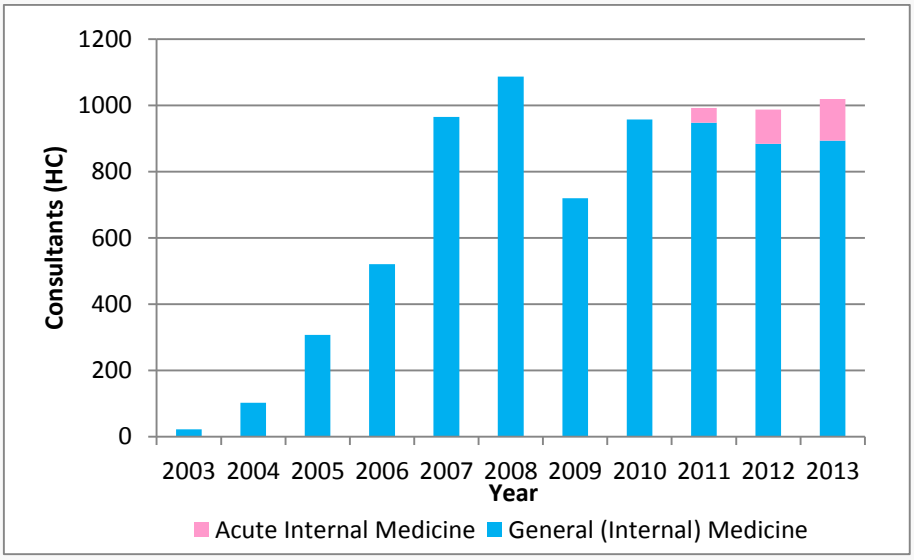
Workforce trends

Figure 4 on the next page shows the acute medicine (coded in the HSCIC as acute internal medicine) and GIM workforces. The GIM workforce has fluctuated over the last 10 years. This is likely due to coding as the majority of specialists with a CCT or equivalent in GIM are dual-trained and may be recorded as either a GIM consultant or as a consultant in their other specialty.

Prior to 2010 acute medicine consultants were included under the GIM category. Since 2010, the amount of specialists with a dual CCT or equivalent in GIM has reduced and the number of acute medicine consultants has increased, however the total number of consultants in these two specialties has remained relatively flat.

Figure 4: Historical supply of NHS consultants (HC) coded under acute internal medicine and GIM

The supply of consultants coded under acute internal medicine and GIM has remained relatively flat over the last three years



Source: HSCIC, 2014b

4.2 The contribution to acute medical care of other physicians

Figure 5 shows the number of geriatric medicine consultants has fluctuated slightly, dipping in 2008, but has risen overall by 24 per cent to 1,108 in the last 10 years. This trend needs to continue at a faster rate if the number of CCT holders is to rise at the same rate as the number of people aged 75 and over.

Figure 5: Historical supply of NHS consultants coded under geriatric medicine

The supply of consultants coded under geriatric medicine has risen since 2008

Source: HSCIC, 2014b

Table 5 below shows the headcount, FTE, participation rate and the estimated number of FTEs from other specialties that contribute to acute medical care provision. In 2013, there were an estimated 405 FTEs contributing to acute medical care provision, which equates to approximately 40 per cent of service provision. This shows the high reliance on dual-trained specialists.

Table 5: Number of consultants in the key specialties that contribute to acute medical care in 2013

Number of Consultants	Headcount	FTE	Average participation rate	Proportion of time spent contributing to acute*	Estimated headcount contribution to Acute	Estimated FTE contribution to Acute
Gastroenterology	940	901	95.9%	12.5%	118	113
Endocrinology and diabetes mellitus	560	525	93.8%	19.5%	109	102
Respiratory medicine	789	750	95.1%	13.0%	103	98
Cardiology	1,063	1026	96.5%	4.9%	52	50
Renal medicine	470	452	96.2%	9.3%	44	42

Source: HSCIC 2014b, *Estimate based on 2011 Royal College of Physicians Census

4.3 Gender and participation rates

'Participation rate' means the extent to which people work full-time.

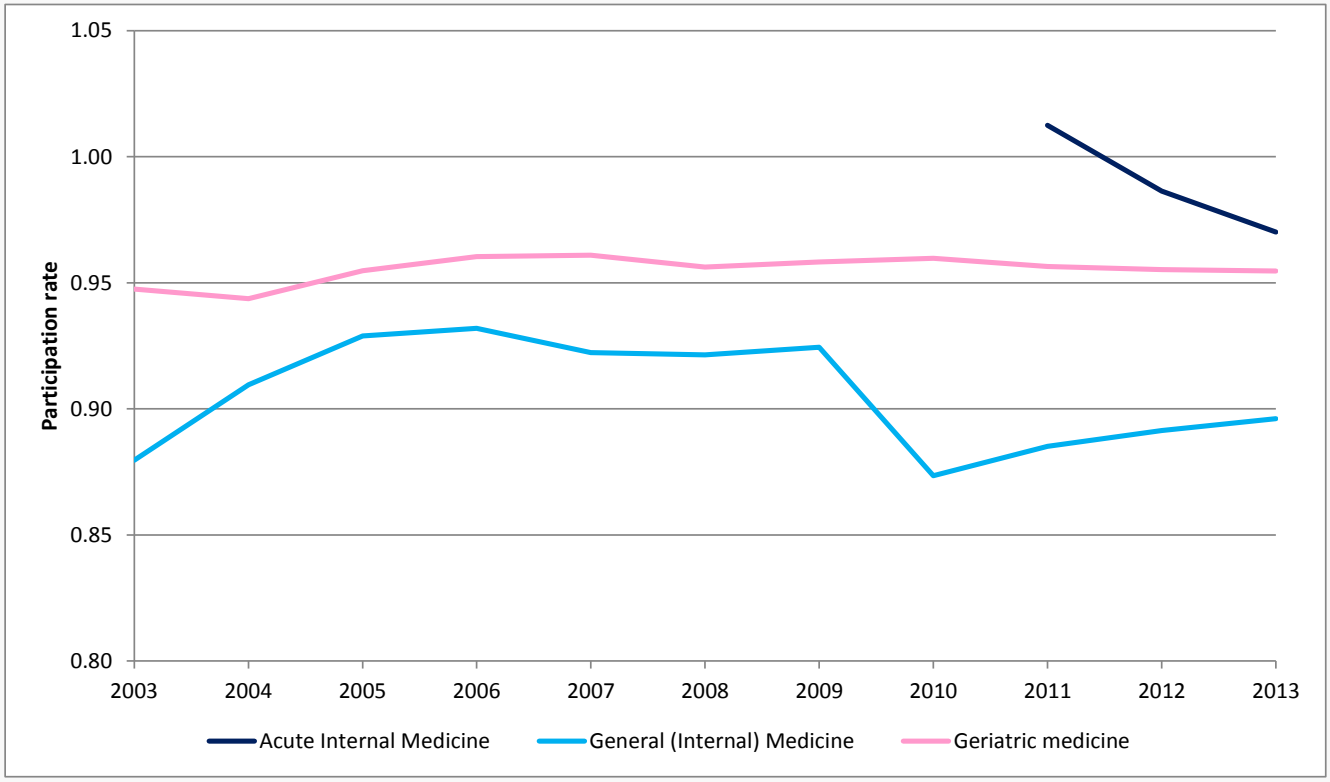
Participation rates of specialists with a dual CCT or equivalent in GIM have fluctuated over the last 10 years. This is likely due to coding as the majority of specialists with a CCT or equivalent in GIM are dual-trained and may record themselves as either a GIM consultant or as a consultant in their other specialty. The participation rate of geriatric medicine consultants has remained steady over the last 10 years.

There are 67 (HC) men and 37 (HC) women with CCTs in acute medicine (HSCIC, 2012). It is likely that the average participation rate of acute medicine consultants will fluctuate in future years as there are very few consultants and small changes in behaviour will therefore have a larger impact on the average.

There are 665 (HC) men and 221 (HC) women with CCTs in GIM and 707 (HC) men and 355 (HC) women with CCTs in geriatric medicine who are contributing to acute medical care. Over the last 10 years women working in GIM and geriatrics had an average participation rate of 6.5 to 7 per cent less than the average for men. There is very little difference in participation rates for men and women in acute medicine.

Figure 6: Historical participation rates of NHS consultants coded under acute internal medicine, GIM and geriatric medicine

Participation rates have fluctuated over the last 10 years



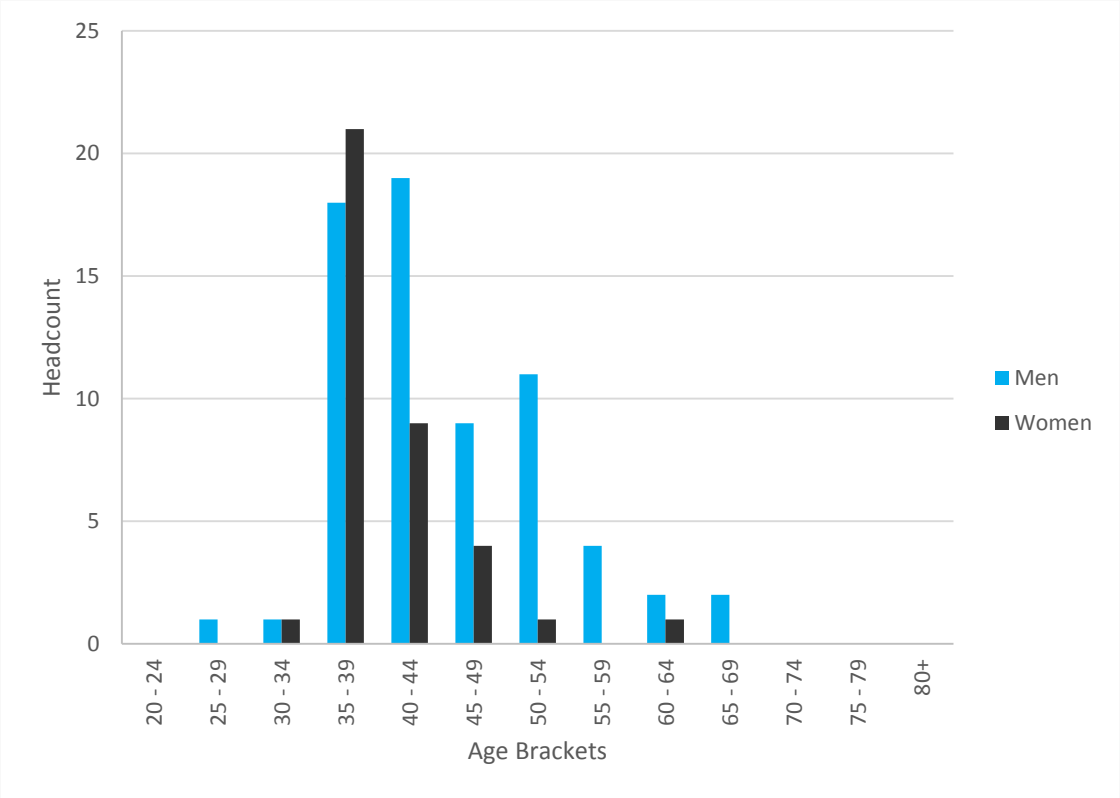
Source: HSCIC, 2014a

4.4 Age, retirement and workforce attrition

Figure 7 shows the age and gender profile for acute medicine consultants. It is a relatively young workforce, with an improving gender balance in the younger age brackets reflecting the greater numbers of women entering medical school in recent years.

Figure 7: Age profile of acute medicine consultants, 2012

The acute medicine workforce is still relatively young

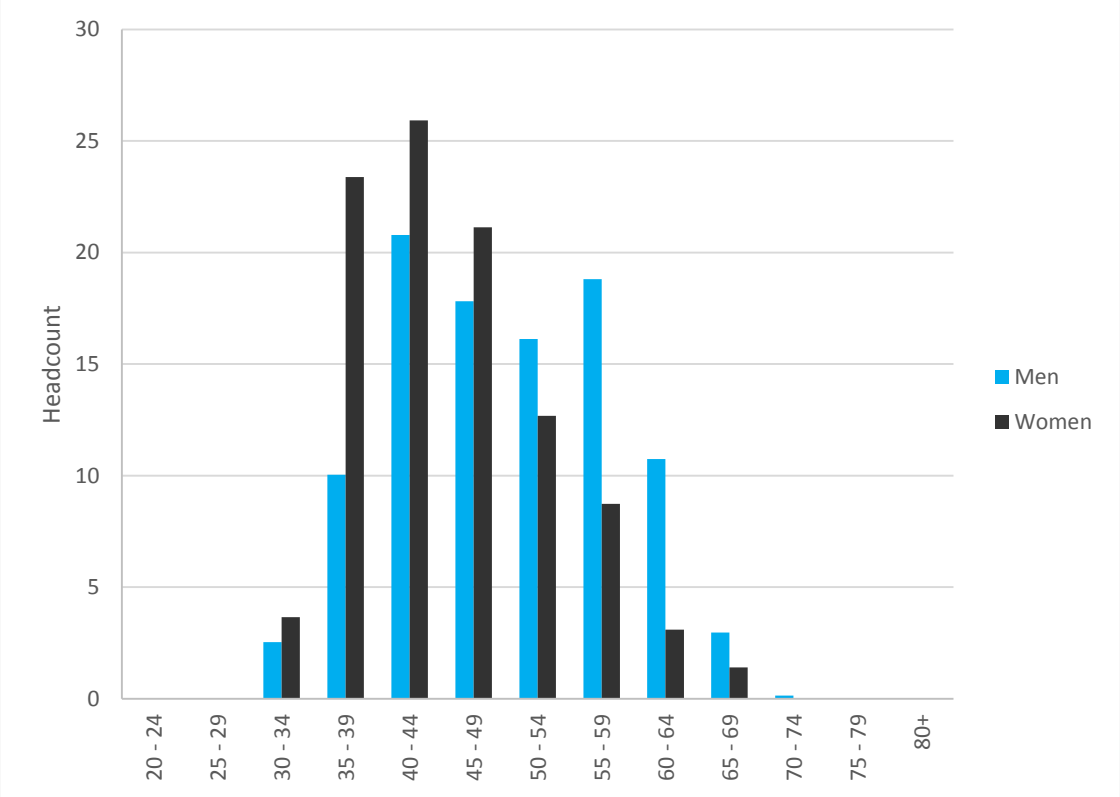


Source: HSCIC, 2013

Figure 8 shows the age profile for geriatricians. Two thirds of the geriatric medicine workforce are men however the genders are more balanced at the lower age bands as more women complete their training and join the workforce.

Figure 8: Age profile of geriatricians 2012

Approximately two thirds of geriatricians are men



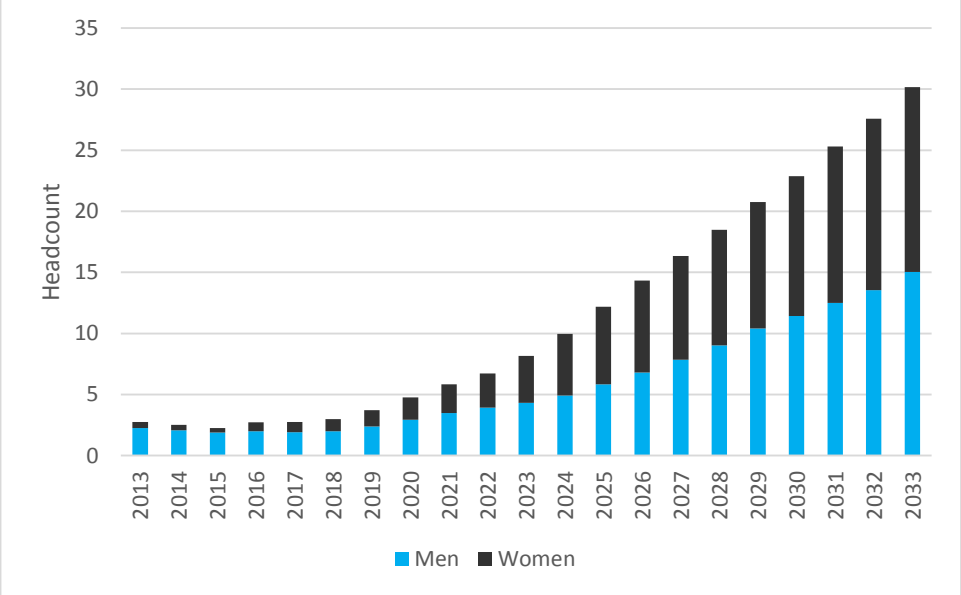
Source: HSCIC, 2013

Figure 9 below shows the baseline retirement projection of acute medicine CCT holders aged 50 years and older from 2013 to 2033. The projection is calculated using the historical probability (2008 to 2011) of leaving at a given age to project how many doctors will leave the workforce in future.

Due to the small amount of acute medicine CCT holders, retirements will be fairly low but are projected to increase as the size of the speciality increases. Please see Annex B for an explanation of the calculation of retirement and pre-retirement attrition.

Figure 9: Projected acute medicine CCT holder retirements per year, by gender, 2013 to 2033

Retirements will start slowly and inevitably build as the number of acute medicine CCT holders increases



Source: CfWI projections based on HSCIC 2014b data

Trends in postgraduate specialty training

Table 6 shows there were 68 accepted offers by trainees for acute medicine specialty training level 3 (ST3) posts in 2013-14. This was an increase from 44 recruits in 2010-11. The RCP 2011 census showed that the acute medicine speciality found it difficult to recruit.

The main reasons given by doctors-in-training were the perception of work-life balance and job content as a consultant, the number of consultants reaching retirement age, a quarter of consultants intending to retire early due to the pressure of work, and fewer consultants than in 2010 reporting they enjoyed their job (RCP, 2011). The fill rate was around 82 per cent for 2013-14 (HEE stocktake, 2014). A breakdown by region was not available to the CfWI at the time of publication.

Table 6: Offers accepted to acute medicine higher specialty training (ST3), 2010/11-2013/14, England

	Acute medicine offers accepted
2010-11	44
2011-12	73
2012-13	45
2013-14	68

Source: Joint working group (JWG) medical dashboard 2010/11-2013/14

The *Future Hospital Commission* (RCP, 2013*)* promoted an increase in generalism, which may encourage doctors-in-training to choose acute medical care (and, specifically, the acute medicine specialty) as a career or as part of a portfolio career. However, it is not yet fully clear whether employers will prefer to employ single or dual CCT holders in the future, so trainees currently have to choose specialties with a degree of uncertainty about their future prospects.

5. Activity, service provision and patient demand

5.1 Guidelines for service provision

Quality Standards

The Society for Acute Medicine (SAM), in collaboration with the West Midlands Quality Review Service (WMQRS), released *Quality standards for acute medical units (AMUs) Version 2* in June 2012. The quality standards aim to improve the quality of care services within AMUs. They are based on, and support implementation of, national strategies and guidance; including National Institute for Health and Care Excellence (NICE) guidance on quality standards (WMQRS and SAM 2012).

The standards set policies, protocols, guidelines and procedures in different topic areas including; information and support for carers and patients, staffing, facilities and equipment, service organisation and liaison with other services and governance.

RCP Acute Care Toolkits

The RCP, in association with SAM, has published a series of toolkits to help improve the delivery of acute medical care (RCP, 2013b). The toolkits contain a range of recommendations, which include:

- Toolkit 1: handover,
- Toolkit 2: High-quality acute [medical] care
- Toolkit 3: Acute medical care for frail older people
- Toolkit 4: Delivering a 12 hour, 7-day consultant presence on the acute medical unit
- Toolkit 5: Teaching on an acute medical unit
- Toolkit 6: The medical patient at risk
- Toolkit 7: Acute oncology on the acute medical unit
- Toolkit 8: The medical registrar on call: maximising clinical experience, training and patient care

5.2 Current demand for service provision

Table 7 below shows a comparison between 2002-03, 2010-11 and 2012-13 for Finished Consultant Episodes (FCEs) in acute, GIM and geriatric medicine. Prior to 2010-11 acute medical care FCEs were included as part of GIM. Between 2002-03 and 2010-11, GIM FCEs increased on average by 3.0 per cent per year.

Since 2010-11 GIM FCEs have increased by 1.3 per cent per year. When combined with acute medicine, FCEs have increased by 1.7 per cent per year since 2011.

Between 2003 and 2011 geriatric FCEs have increased on average by 4.3 per cent. The large increases of just under and over one third in GIM and geriatric medicine respectively are higher than that of population growth alone, which suggests significant underlying demand growth that cannot be explained by demographic drivers alone.

The number of FCEs in acute medicine show demand has risen substantially from 3,270 in 2011 to 9,391 in 2013. However, it is likely that FCEs in acute medicine will continue to rise until the recording of FCEs adjust to new categorisation and are consistently recorded under the correct category.

Table 7: Finished Consultant Episodes in acute medical care

Medical specialty	2003	2011	2013	Change 2003-2013
Acute medicine	0	3,270	9,391	n/a
General Internal Medicine	2,215,975	2,814,715	2,885,177	30%
Geriatric medicine	537,462	720,772	747,523	39%

Source: HSCIC Hospital Episode Statistics data 2011, 2013

5.3 Demand for beds

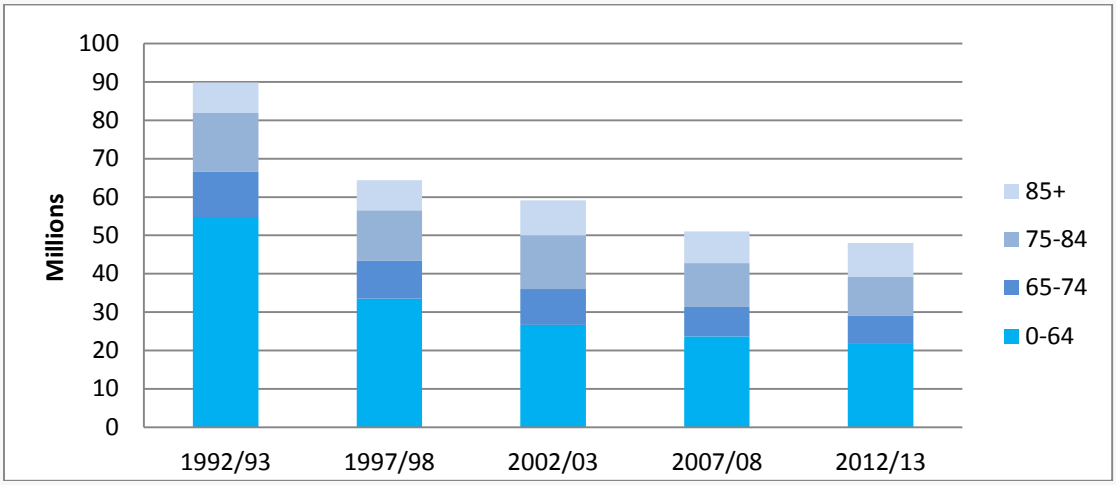
A report by The King's Fund in 2012 stated that, in the past 10 years, the proportion of 'bed days' occupied by people aged 85 years or greater has risen (from 22 to 25 per cent) and over the next 10 to 20 years the trend is expected to continue as the population ages and the absolute number of very old people increases (The King's Fund, 2012).

The RCP stated in 2012 that there are a third fewer general and acute medical beds than there were 25 years ago, and the last decade has seen a 37 per cent increase in emergency admissions. Hospitals have dealt with this by reducing the average length of stay, but in the past three years length of stay has started to rise for patients aged 85 and older (RCP, 2012).

Bed days

Figure 10 shows that over the last 20 years, the total number of bed days has decreased in every age group apart from those aged 85 or over, for whom the number has increased by 10 per cent (HSCIC, 2014a). The same HSCIC findings show that older people are living longer, healthier lives; based on data from 2010-2012, the life expectancy upon reaching the age of 65 for both men and women has increased by 18 years for men and 21 years for women, (HSCIC, 2014a). The HSCIC also report that the emergency admission rate for patients aged 85 is the highest of all patient groups, representing 65 per cent of all emergency admissions in 2012-13 (HSCIC, 2014a).

Figure 10: FCE bed days 1992/92 to 2012/13 by age group



Source: HSCIC, 2014a

In 2008-09 the HSCIC changed the counting methodology for bed days to no longer include estimates for cases that continue beyond the end of the financial year to avoid overestimating bed days.

Quantification of current service demand

It is challenging to quantify current acute medical care service demand. As FCE data has only been specifically categorised as acute medical care and collected for two years it is difficult to ascertain if the current figures are robust. In future years, the data collection should provide a more robust picture of demand with less risk of large unexplained fluctuations.

5.4 Current level of unmet need

When forecasting demand the CfWI is commissioned to estimate the workforce needed in future to maintain current levels of care per patient. The CfWI recognises there is always likely to be some unmet need in any health system. The expert panel, consisting of 23 participants, said that around 30 per cent of need is unmet today. This estimate is higher than those we have obtained for most other medical and surgical specialties.

Below are some examples of rationales provided by Delphi panel members:

> **“The acute specialty is perceived badly by trainees as it has a high workload, therefore recruitment can be difficult.”**
>
> Acute medical care Delphi panellist

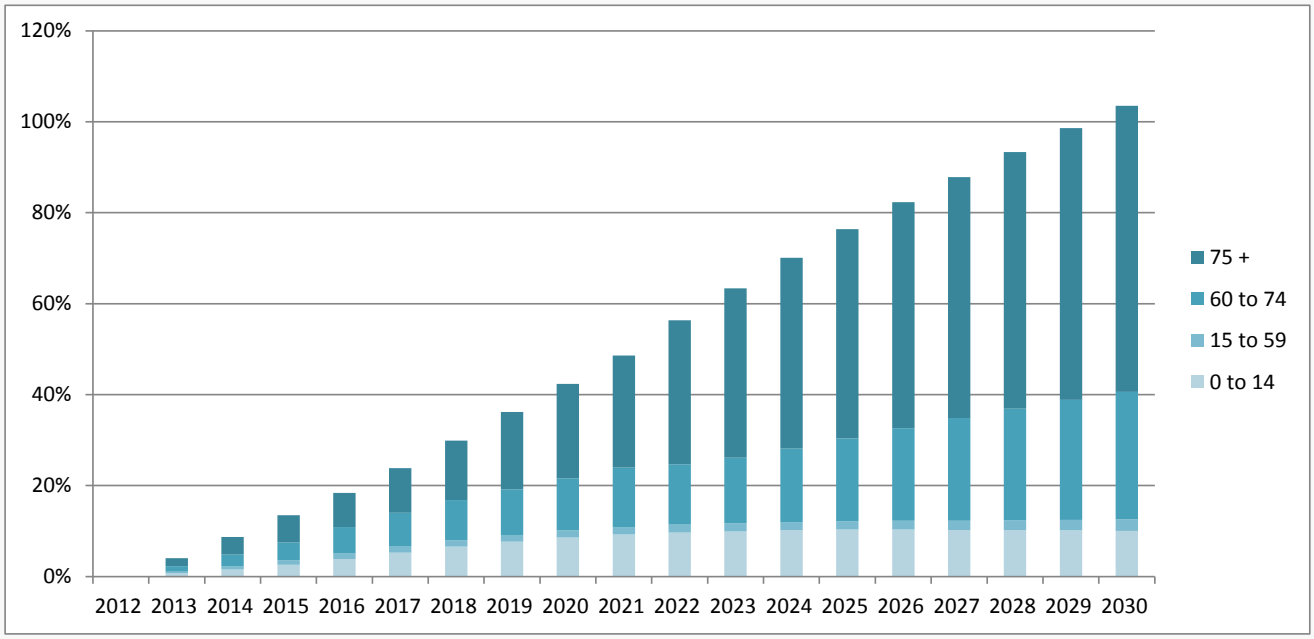
> **“Acute medical care provision tends to be ‘reactive’ to patients’ needs rather than ‘proactive’ in resolving issues at first admissions and preventing reoccurrences.”**
>
> Acute medical care Delphi panellist

6. Future patient demand

6.1 The ageing population

The demand for acute medical care has risen in part due to the growing, ageing population. In future, the expectation is that demand will continue to rise as shown in Figure 11. The population aged 60 to 74 has grown by 3 per cent since 2012 and is expected to increase by a further 28 per cent by 2030 (ONS, 2014). The population aged 75 years and older has grown by 4 per cent since 2012 and is expected to increase by a further 63 per cent by 2030.

Figure 11: Projected percentage change in population size by age group from 2012 to 2030



Source: Office for National Statistics, 2014

The *Future Hospital Commission* (RCP, 2013) states that nearly a quarter of Britain's population is aged 60 or older, and half of those currently aged over 60 have a chronic illness (RCP, 2013). This proportion will increase as the population aged 75 and older continues to rise.

The commission further states that two thirds of patients admitted to hospital are older than 65 years; around 25 per cent of hospital inpatients have a diagnosis of dementia; and patients aged 85 years and older now account for 22 per cent of all days spent in hospital beds. This means that today's patients are not only older, but also have more co-morbidities and a far greater complexity of illness, both physical and mental (RCP, 2013).

6.2 Baseline demand modelling assumptions

When forecasting demand, the CfWI estimates the workforce needed in the future to maintain levels of acute medical care per capita in England. The CfWI therefore assumes current demand is equal to current supply, and this is the basis from which future demand is calculated. Across the NHS (and any healthcare system) there is always likely to be some unmet need. We are not suggesting there is no unmet need at present. It is important to note workforce demand is that which the NHS can afford. It is often confused with 'need', which is the required workforce if there were no financial constraints.

Factors impacting future 'baseline' demand are:

- population growth and the rising proportion of older people (based on the ONS 2012 projections)
- the proportionally greater reliance of the elderly on acute medical care services (based on HSCIC HES 2013 data)
- expected changes to workforce productivity over the projection period. Productivity is defined as the ability of the workforce to deliver the necessary services, taking into account factors such as skill mix and technology
- The Office for National Statistics found an average 0.4 per cent growth in NHS productivity over the last 15 years (ONS, 2012). For the purposes of modelling and projections, the CfWI have assumed that productivity in acute medical care continues to increase at this rate.

Baseline demand for hospital-based acute medical care is forecast to increase by around 20 per cent between 2013 and 2033 due to demographic and productivity changes. However, the baseline estimate does not capture all demand drivers, so is likely to be an under-estimate of future patient demand.

6.3 Demand scenarios for acute medical care

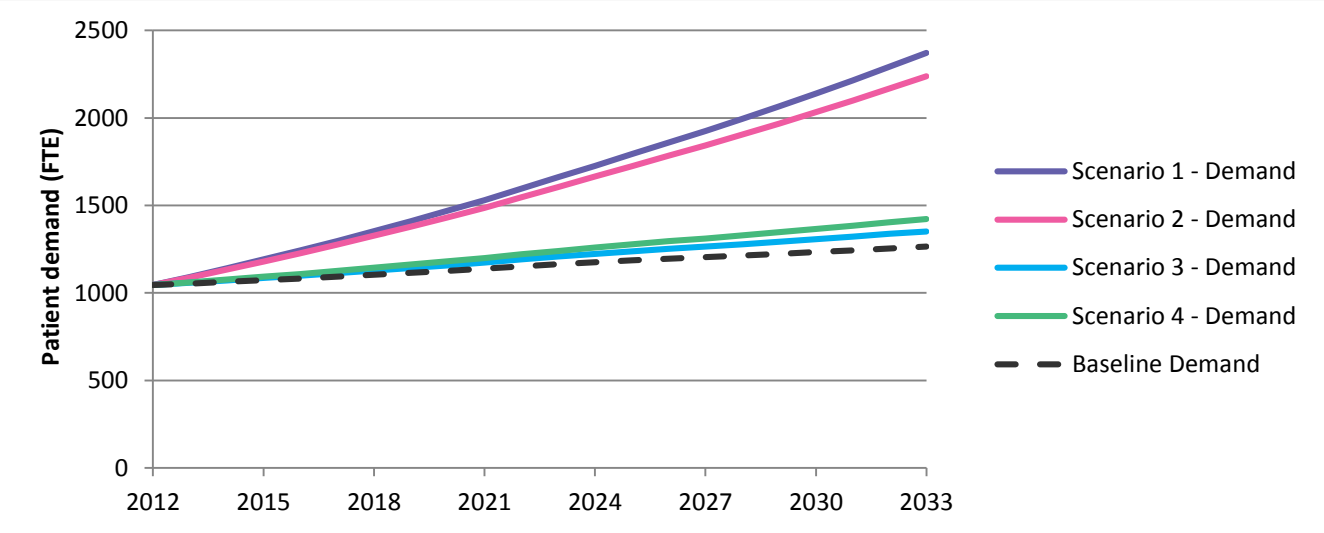
Additional factors impacting on future scenario demand projections include productivity and average individual patient need.

The Delphi panel expected average individual patient need to rise in all four future scenarios. The panel also expected productivity and efficiency to fall in scenarios 1 and 2 but increase and remain the same in scenarios 3 and 4 respectively.

Figure 12 shows the projected patient demand for acute medical care for each of the four scenarios compared to the CfWI baseline. Of the four scenarios for acute medical care, demand is projected to increase the most in scenario 1 and the least in scenario 3. **All scenarios provided a demand projection higher than the CfWI baseline comparator, indicating that the Delphi panel expects a high level of demand in the future.**

Figure 12: Change in patient demand for acute medical care from 2012

Demand is projected to increase in all scenarios, the most in scenario 1 and the least in scenario 3



Source: CfWI model of the acute medical care workforce for England

Delphi panel members gave rationales for their answers. Scenario 1 is projected to increase demand the most – as trainees focus on specialist training there would be a reduction in the supply of acute medicine CCT holders and/or those willing to provide ongoing GIM services. This means acute wards would not be efficiently resourced and patients would increasingly present in secondary settings at crisis point requiring more urgent acute medical care. Due to a lack of acute medicine CCT holders, patients would only be 'patched up' and consequently their care issues not properly resolved so readmission and recurrence would be more commonplace, further increasing demand for acute medical care services.

In contrast, scenario 3 is projected to increase demand the least out of the four scenarios. The Delphi panel believed that the increase in generalist roles would provide an efficient acute medical care service that could provide better care and health outcomes for patients. This combined with integrated health and social care would decrease readmissions through, amongst other factors, appropriate rehabilitation resulting in reduced readmissions.

As Figure 12 indicates, in two of the four scenarios workforce demand significantly outstrips baseline patient demand over the projection period – but for the other two scenarios they are broadly in balance. **The wide gap between the two sets of scenario projections confirms the high level of uncertainty about future demand.**

7. Future workforce supply

7.1 Contributions to hospital-based acute medical care

Several specialties contribute currently to the provision of acute medical care. The proportion of time that specialists currently spend delivering acute medical care service is outlined in Table 8.

Table 8: Proportion of time specialists spend delivering acute medical care service

Specialty	Contribution to acute medical care services	Calculated contribution to total acute medical care services
Acute medicine	100% of their time	10.7% of the care
Geriatric medicine	15.5%	14.7%
Physicians from other specialties	10.3%	74.6%

Source: CfWI analysis using census of consultant physicians and medical registrars in the UK (2011)

The percentages in Table 8 above are calculated by considering the profession's planned activities (PAs). A hypothetical example would be a speciality that works, on average, 10 PAs per week. Within that specialty, 80 per cent contribute to acute medical care service provision. The doctors that contribute to acute medical care service provision work an average of five acute PAs per week (50 per cent of their time). As 80 per cent of the specialty spends 50 per cent of their time contributing to acute medical care service provision, this means the speciality spends 40 per cent of its time, in total, providing acute medical care.

The three 'other physicianly specialties' that contribute most service to acute medical care are gastroenterology, diabetes and endocrinology, and respiratory medicine. **At an elicitation workshop, an expert panel told us that the contribution of these three specialties to the acute medical 'take' is likely to reduce slightly over the next 20 years to 2033 due to rising demand for their specialist services.**

Gastroenterology CCT holders currently contribute 12.5 per cent of their time, on average, to the acute medical care take. **The expert elicitation panel told us that they expected this to fall to 11 per cent by 2023 and then to 8 per cent by 2033.** Gastroenterology is currently adjusting to seven-day working, which has resulted in consultants moving off acute medical care rotas. **The elicitation panel expected there to be an increase in demand for gastroenterology due to increases in bowel cancer screening, acute gastro-intestinal haemorrhage rotas and changes in NICE guidance for endoscopy.** These drivers will require gastroenterology consultants to spend more time in their specialty and thus have less time to work on the acute medical care take. By 2033, the panel expected the contribution to continue to reduce due to this pattern of greater specialisation.

Diabetes and endocrinology CCT holders currently contribute 19.5 per cent of their time, on average, to the acute medical care take. **The expert elicitation panel told us that they expected this would fall to 18 per cent by 2023 and then to 10 per cent by 2033.** Due to the rising rates of obesity, the number of people with type 2 diabetes has increased, more so in some ethnic populations than others. People are living longer with diabetes (type 1 and 2) which increases the demand for diabetic services. The panel told us that diabetic services may

well move into the community. This would mean that there would be fewer diabetologists in secondary settings to provide services to support the acute medical care take. There will also be an increase in demand for endocrinology services due to the ageing population. By 2033, the panel expected diabetologists to follow cardiologists by largely 'divorcing' themselves from undifferentiated acute medical care service provision.

Respiratory medicine CCT holders currently contribute 13 per cent of their time on average to the acute medical care take. **The expert elicitation panel stated that they expected this would fall to 12 per cent by 2023 and then to 10 per cent by 2033.** The panel expected respiratory medicine to follow a similar path to gastroenterology. Respiratory medicine CCT holders are also providing a seven-day service that needs to be staffed. There are increases in demand due to interventional work such as plural ultrasound and bronchoscopy. Asthma and chronic obstructive pulmonary disease (COPD) management could form part of a more fully integrated care service and this may result in a move into the community, removing some doctors from secondary settings. The ageing population has presented respiratory medicine with a large number of elderly patients suffering from the consequences of smoking and an increase in the number of dependent in-patients who are staying in hospital beds for longer periods of time.

All of the three specialties are expecting an overall reduction in participation as more men and women decide to work less than full time hours or take time off to raise families or pursue other interests in an extended working life (due to the increase in the working retirement age).

The estimated reductions in contribution to the acute medical take of all three specialties are primarily due to rising demand for these specialties' services.

Table 9 shows the proportion of their time that specialists in the 'physicians from other specialties' category spent delivering acute medical care services in 2011, and as predicted in 2023 and 2033 by the expert elicitation panel.

Table 9: Proportion of time specialists in the 'physicians from other specialties' category spend delivering acute medical care services

Specialty	Contribution to acute medical care service 2011	Contribution to acute medical care service 2023	Contribution to acute medical care service 2033
Gastroenterology	12.5% of their time	11%	8%
Diabetes and endocrinology	19.5%	18%	10%
Respiratory medicine	13%	12%	10%

Source: CfWI analysis using census of consultant physicians and medical registrars in the UK (2011). CfWI elicitation workshop with participants for the future values. Note that these future estimates are provided here for information but have not been incorporated into the modelling.

7.2 Baseline supply modelling assumptions

The baseline supply modelling assumptions are as follows:

- National higher specialty recruitment remains at the most recent level of 68 for single CCT acute medicine, 115 for geriatric medicine and 653 for the 'other' group (HEE January 2014 stocktake).

- Annual workforce attrition for those aged under 50 years is 3.33 per cent for men in acute and geriatric medicine and 3.16 per cent for women in acute and geriatric medicine. It is held at 2.07 and 1.75 for men and women respectively in the 'other' contributing specialties (CfWI analysis of HSCIC data set 2013).
- Annual workforce attrition for those aged 50 and older varies by age point; the CfWI model uses a profile based on actual data rather than a single assumed retirement age for all.
- Geriatric medicine specialists and 'other' contributing specialists spend 15.5 per cent and 10.3 per cent of their time delivering acute work initially. This then varies by future scenario according to the Delphi panel's median judgments. As such, we multiply the total sizes of these workforces by these contribution factors to calculate their relative headcount and FTE contribution to acute supply in future.

7.3 Baseline supply projections

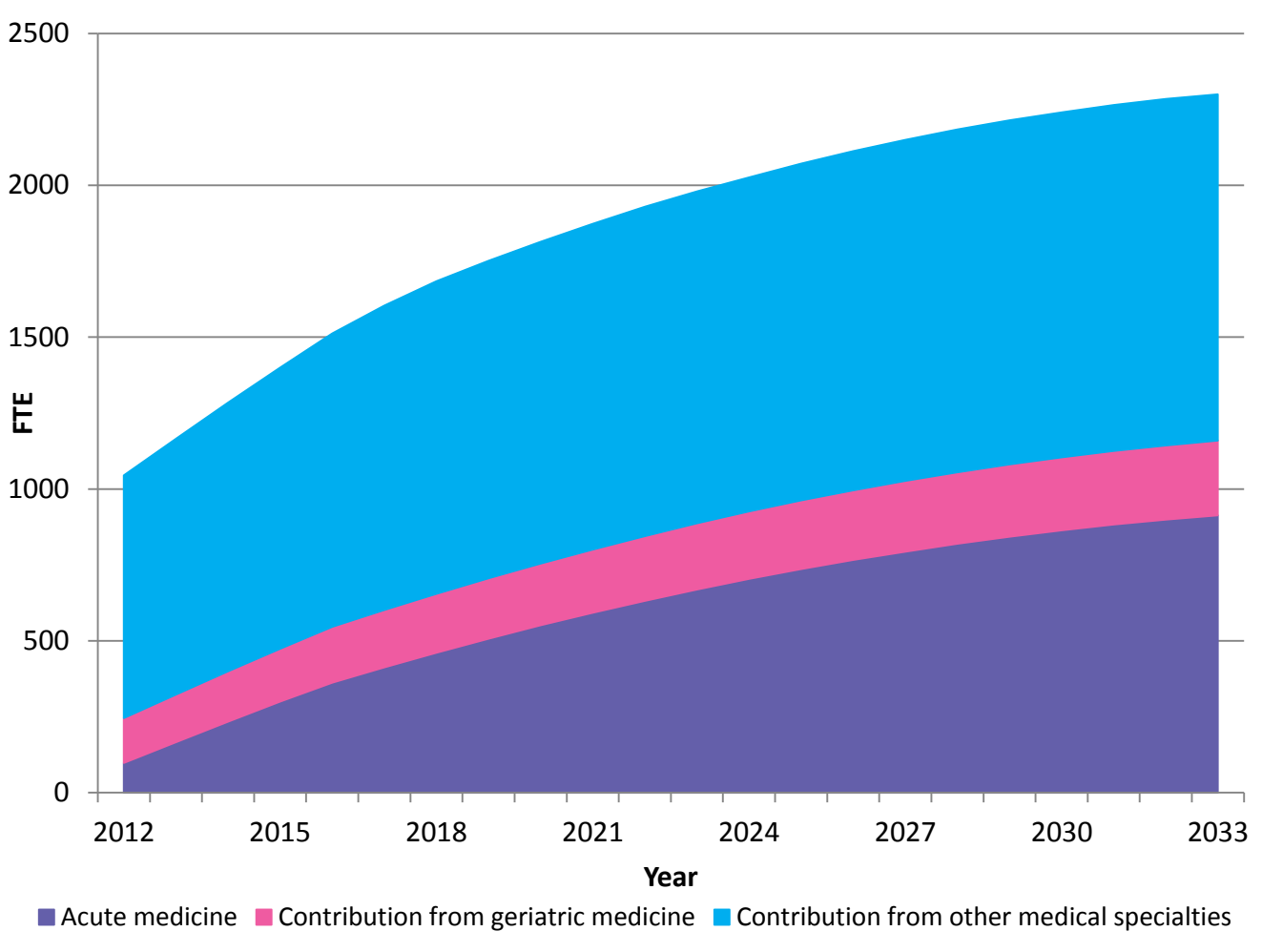
Figure 13 below shows the CfWI combined supply projection for all physicians involved in the provision of acute medical care services. **The total supply (headcount) is projected to increase by 97 per cent from 1,165 in 2013 to approximately 2,300 in 2033.**

The number of acute medicine CCT holders is projected to increase rapidly from 167 FTE in 2013 to 913 in 2033, an increase of around 547 per cent. This is an expected pattern in a new specialty.

By 2033 approximately 50 per cent of workforce supply is projected to be provided by physicians from other specialties, compared with 72 per cent in 2011. Whilst this may provide employers with flexibility, the contributions from other specialties are expected to decline due to demand pressures in their other specialties. In the short to medium term, whilst the total supply of doctors for acute medical care is seen to grow, there is reliance on physicians from other specialties.

Figure 13: Projected total supply of CCT holders (combined acute and geriatric medicine + 'others'), FTE

Overall, the total headcount (supply) is projected to grow by 97 per cent by 2033



Source: CfWI model of the acute medical care CCT holder workforce in England

Table 10 below shows the change in CCT holder supply by specialty grouping from 2013 to 2033, as represented by Figure 13. The supply for each specialty grouping is projected to grow from 2013 to 2033. The contribution of acute medicine CCT holders is projected to increase from approximately 14 per cent to approximately 40 per cent.

The contribution of 'other' physicians also decreases from about 72 per cent to about 50 per cent however there is still a large reliance on other physicians to provide acute medical care service. Additional uncertainty surrounds the future contributions of other physicians to the acute take, which may fall at a faster rate if more specialties follow the direction of cardiology which has reduced its contribution to acute medical care services.

It is important to note the reducing contribution of geriatricians, however this is not unexpected due to the projected increases in the number of older people and their commitment to their own speciality over acute medical care.

Table 10: Projected supply by specialty – full time equivalent (FTE)

Specialty	FTE – 2013	Relative contribution to total acute workload 2013	Projected FTE – 2033	Relative contribution to total acute workload 2033	Change in FTE from 2013 to 2033
Acute medicine	167	14.3%	913	39.7%	448%
Geriatric medicine	157	13.5%	246	10.7%	57%
'Other' physicians	843	72.2%	1,140	49.6%	35%
Total	1,167	100%	2,299	100%	97%

Source: CfWI model of the acute medical care CCT holder workforce in England

7.4 Supply scenarios for acute medical care service

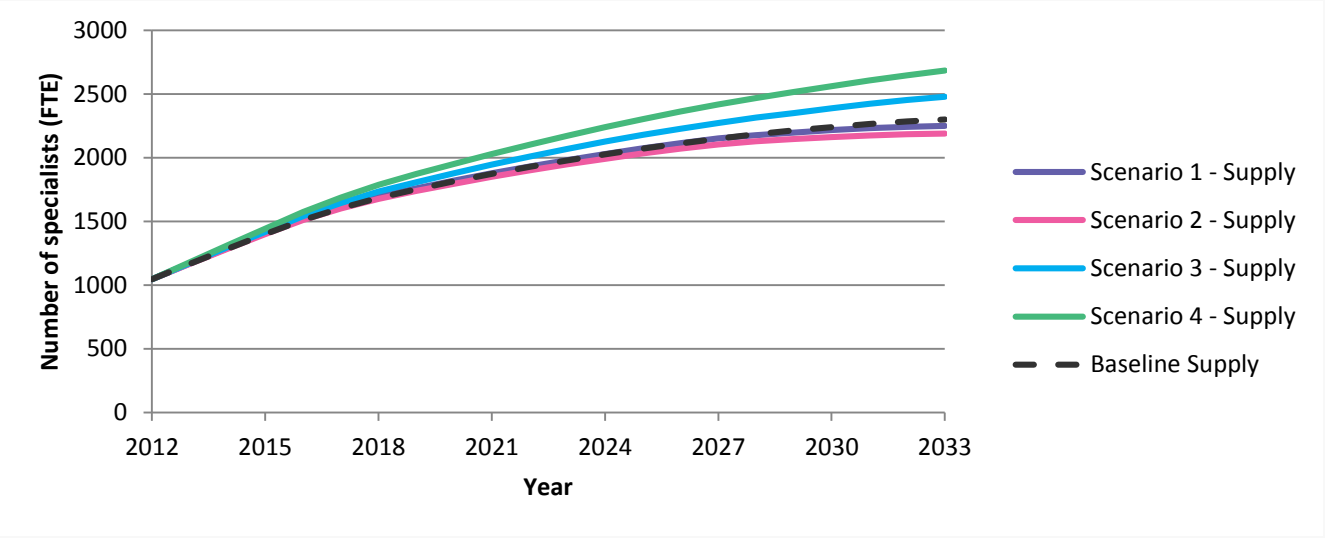
Figure 14 below shows the projected baseline and supply scenarios of specialists that contribute to acute medical care services. The supply projections for scenarios 1 and 2 sit just below the baseline while scenarios 3 and 4 are slightly higher.

The range of supply scenarios is narrower than the demand scenarios; this is because there are fewer uncertain variables. The main uncertainty – and therefore risk – to the supply projections is the uncertain future contributions of 'other physicianly specialties' to the acute take.

Gastroenterology, diabetes and endocrinology and respiratory medicine have suggested that their contributions will decrease. Further work looking at the contributions of 'other' physicians would be advantageous to provide a more accurate picture of future supply.

Figure 14: Change in supply of specialists that contribute to acute medical care

Supply is projected to increase above the baseline in scenarios 3 and 4 but is slightly lower in scenarios 1 and 2



Source: CfWI model of the acute medical care CCT holder workforce in England

8. Demand and supply projections

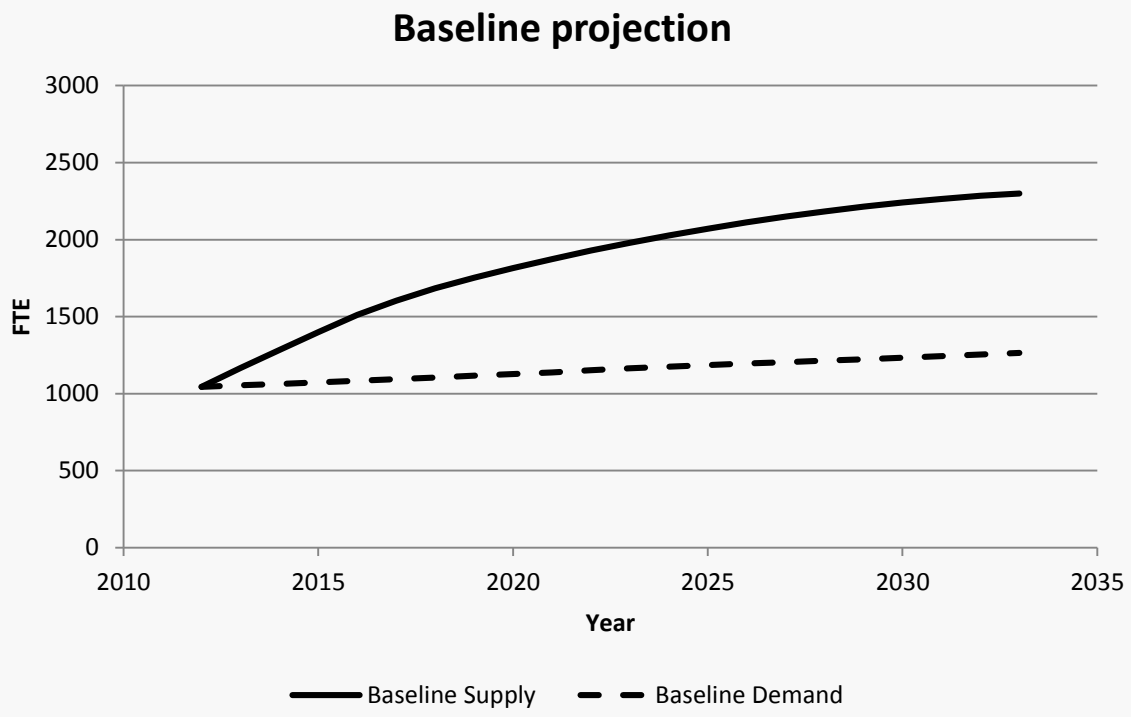
8.1 Baseline demand and supply

CfWI modelling produced 'baseline', and scenario-specific projections of workforce supply and patient demand for the acute medical care workforce over the next 20 years to 2033. These projections, along with other evidence and intelligence, help us determine whether there is a sufficient supply of relevant CCT holders to provide the same level of service per capita as today, and to understand whether workforce supply is in line with expected demand. Figure 15 shows baseline demand and supply projections for the combined acute medical care workforce. **Baseline supply is projected to exceed baseline demand, however it is important to note that demand is likely to be under-estimated in the 'baseline' projection** as explained in section 6.3.

It is also important to note here that supply can, to a significant extent, be flexed by employers increasing or decreasing the amount of time dual-accredited medical specialists contribute to acute medical care. The majority of the supply increase comes from the growth of the acute medicine specialty. Supply may project to a lower point if contributions by other specialties to acute medical care reduce slightly as expected.

Figure 15: Baseline demand and supply projection for the combined acute medical care workforce

Baseline supply is projected to outstrip baseline demand



Source: CfWI model of the acute medical care CCT holder workforce in England

8.2 Demand and supply scenario projections

Figure 16 below shows demand and supply projections for the four scenarios as well as the combined baseline for acute medicine, geriatric medicine and 'other' physicians.

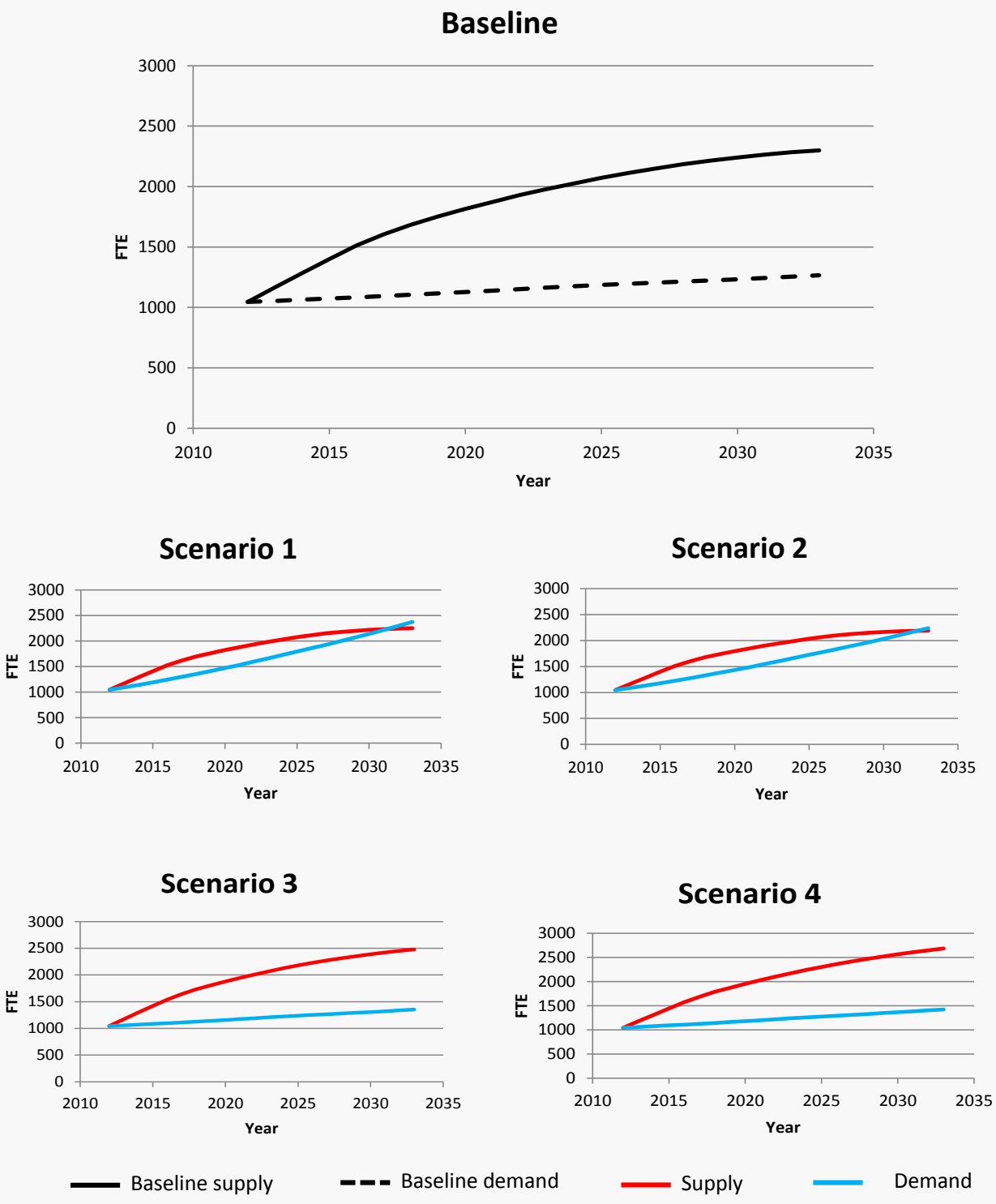
The spread of supply projections is narrower than the spread of demand projections, reflecting greater uncertainty about demand.

Actual future demand and supply will likely fall between the high and low extremes generated by the scenarios. As all the supply projections are above the demand projections there is a risk total supply will exceed demand.

The majority of the supply increase comes from the growth of the acute medicine specialty. However it is important to remember that supply can still, to a significant extent, be flexed by employers increasing or decreasing the amount of time dual-accredited medical specialties contribute to acute medical care. Total supply may rise at a slower rate if the contributions of other specialties to acute medical care reduce as expected.

The expert panellists at the CfWI elicitation workshop suggested contributions from the 'other specialties' to acute medical care service will reduce, which may lead to a reduction in future supply to balance future demand, but this assertion needs confirming as real-time service data becomes available.

Figure 16: Demand vs. supply projections for CCT holders for the acute medical care service



Source: CfWI system dynamics model of the acute medical care workforce for England

8.3 Risks to demand-supply balance over the medium term

The projection of baseline demand is exceeded by the demand projections for all four demand scenarios 1 – 4. The range of scenario projections for supply is narrower than those for demand, as there are fewer uncertainties.

The total workforce supply projections for scenarios 1 and 2 are slightly below baseline supply. However, scenarios 3 and 4 are slightly higher, representing variations in the political and financial climate and the impact these factors may have on supply in future, according to the Delphi panel of experts.

Whilst the contribution of geriatricians is projected to remain fairly constant, the impact of the ageing population on the geriatrician CCT holder workforce has not been specifically modelled. The contributions of physicians from other specialties is also expected to decrease on average. Cardiology has already dramatically reduced its contribution to the acute take and it is likely other specialties could follow suit. This could result in lower projected total supply of CCT holders to provide acute medical care.

9. Proposals and next steps

Based on the findings of this in-depth review the CfWI makes the following suggestions to help balance patient/service demand and workforce supply in the future:

The CfWI suggests that Health Education England continues to fill the current number of higher specialty trainee (ST3) posts for the new acute medicine specialty for the time being, to minimise the risk of undersupply of acute medics.

There is a growing supply of CCT holders in the new acute medicine specialty. However, at present and for the medium term, acute medical care is reliant upon significant service contributions from geriatricians and physicians from other medical specialties to provide a comprehensive 24 hour or round-the-clock acute medical care service.

It should however be noted that if employers were to reduce dual-accredited physicians' contributions to acute medical care it would likely be difficult to reverse such arrangements without the provision of significant re-training, as acute medical skills atrophy quickly without regular use.

The CfWI suggests that acute medicine training levels are revisited in three years' time.

The acute medicine specialty is relatively new. In light of the uncertainty – described in this report – surrounding both demand and supply for CCT holders able to provide acute medical care it would be appropriate to review the number of postgraduate medical training posts in acute medicine in three years' time. A further review will determine whether training numbers are at the appropriate level relative to trends in acute medical care service activity and patient demand given the changing contributions of other specialties to acute medical rotas.

The CfWI suggests a workforce review of core medical training be undertaken in the next two to three years.

Further workforce reviews might reasonably be undertaken in the next two to three years as there have recently been many changes in the flows of trainees through the core medical training (CMT) and acute care common stem (ACCS) training pathways. These changes impact the outflows into higher specialty training (HST) in the majority of 'physicianly specialties' with or without a second CCT programme in G(I)M. It will be important to monitor how changes in emergency and acute specialty training impact on other medical specialties.

The CfWI suggests HEE considers workforce reviews of both geriatric medicine and gastroenterology.

Further workforce reviews could be undertaken in the next two to three years to build understanding of the supply of geriatricians to serve an increasing number of people aged over 70, and also the supply of gastroenterologists. Both specialties are key contributors to acute medical care. The role of geriatricians may also change to increase community-based support and integrated care, and this may limit their availability for the provision of secondary care facility-based acute medical care.

Annex A: Project reference group and affiliations

The CfWI sought input from a wide range of health professionals as part of the scoping and consultation for this review. A wide range of experts participated in one of the horizon scanning focus groups (summer 2013) or the scenario generation workshop (September 2013) or participated in the Delphi panel exercise (January 2014). We would like to thank them all for their contributions. We welcome any responses they may have to this report.

Dr Sveta Alladi *
Fiona Ball †*
Dr Tim Battcock
Professor David Black #
Dr Rachel Bousfield †*
Ian Bullard
Professor Bill Burr †
Dr Sumeet Chadha
Dr Helen Cugnoni †
Dr Gary Davies #
Dr Jugdeep Dhesi *
Dr Anas El Turabi *
Dr Caroline Elston #
Professor Timothy Evans *
Donald Farquhar
Dr Jane Fitch †
Dr Simon Fletcher *
Jon Francis *
Tom Gentry *
Dr Andrew Goddard
Dr Adam Gordon #
Lene Gurney
Aaron Haile †*
Dr Diana Hamilton-Fairly *
Dr Rowan Harwood *
Jonathan Howes *
Dr Christine Johnson *
Dr Ruth Johnson *
Dr Mike Jones †*
Wyn Jones †*
Kevin Kelleher *
Liz Lees
Dr Nelson Lo †
Dr Melanie Lockett #
Dr Mohana Maddula *
Dr David Marshall †
Derek Marshall *
Dr Louis Merton †
Pauline Milne †
Patrick Mitchell †*
Liz Myers
Dr Jyothi Nippani *
Dr Vicky Osgood *
Dr Sonia Panchal *
Dr Ben Pearson *
Dr Chris Roseveare *
Dr Emma Rowland †
Dr Georgina Russell †*
Professor David Sowden †
Dr Andrew Stein
Professor Ganesh Subramanian *
Dr Mark Temple
Dr Louella Vaughan *
Dr Rob Wears *
Professor Keith Willett *
Dr Zoe Wyrko †*
Dr Jane Youde *

† – scenario generation workshop participant * – Delphi panellist # – elicitation workshop participant.

We would also like to thank the report commissioners Cris Scotter at the Department of Health and Patrick Mitchell at Health Education England.

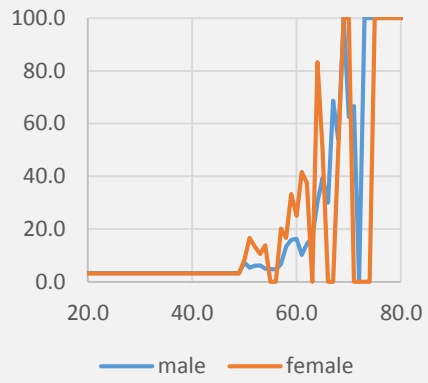
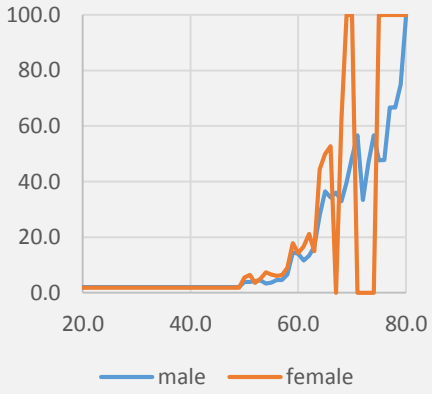
Annex B: Data sources and modelling assumptions

Supply modelling assumptions

<table>
<tr><th>Model element/ variable</th><th>Data confidence rating</th><th>Source of data/assumption</th><th>Validation</th><th>Data/assumption</th></tr>
<tr><td>Intake to higher specialty training</td><td>Medium</td><td>HEE ST3/4 Stocktake 2014

2011 Census of consultant physicians and medical registrars in the UK</td><td>2013 accepted recruitment to first year of higher specialty training from HEE stocktake. Gender split taken from Census. Held constant forward</td><td><table><tr><th>Specialty</th><th>Value</th></tr><tr><td>Acute</td><td>68</td></tr><tr><td>Geriatric</td><td>115</td></tr><tr><td>‘Other’</td><td>653</td></tr></table></td></tr>
<tr><td>Intake to higher specialty training age profile</td><td>High</td><td>2011 Census of consultant physicians and medical registrars in the UK</td><td>Assumed census provided age profile for all years is reflective of first years</td><td>Available on request</td></tr>
<tr><td>Time taken to complete training</td><td>Medium</td><td>The Joint Royal Colleges of Physicians Training Board (JRCPTB) website, Health Education England (HEE) stocktake, previous CfWI analysis for Shape of the medical workforce: Informing medical training numbers</td><td>Acute and Geriatric doctors set to take the time stated to complete training on JRCPTB website</td><td><table><tr><th>Specialty</th><th>Value</th></tr><tr><td>Acute</td><td>4 years</td></tr><tr><td>Geriatric</td><td>4 years</td></tr></table></td></tr>
</table>

<table>
<tr><th>Model element/ variable</th><th>Data confidence rating</th><th>Source of data/assumption</th><th>Validation</th><th>Data/assumption</th></tr>
<tr><td></td><td></td><td></td><td>‘Other’ specialty split between different years using other two sources</td><td><table><tr><th></th><th>Year</th><th>Percent</th></tr><tr><td rowspan="6">‘Other’</td><td>3</td><td>1.0</td></tr><tr><td>4</td><td>4.6</td></tr><tr><td>5</td><td>36.2</td></tr><tr><td>6</td><td>47.7</td></tr><tr><td>7</td><td>10.3</td></tr><tr><td>8</td><td>0.2</td></tr></table></td></tr>
<tr><td>Percentage of doctors that leave at some point during training</td><td>High</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><table><tr><th>Specialty</th><th>Value</th></tr><tr><td>Acute</td><td>1% do not complete</td></tr><tr><td>Geriatric</td><td>1% do not complete</td></tr><tr><td>‘Other’</td><td>1% do not complete</td></tr></table></td></tr>
<tr><td>Doctors in training at start of simulation</td><td>Very High</td><td>HEE stocktake of doctors-in-training</td><td>Current doctors-in-training from stocktake</td><td><table><tr><td>Specialty</td><td>Value</td></tr><tr><td>Acute</td><td>303</td></tr><tr><td>Geriatric</td><td>614</td></tr><tr><td>‘other’</td><td>4843</td></tr></table></td></tr>
<tr><td>Initial specialist trained doctors</td><td>Very High</td><td>NHS Health and Social Care Information Centre (HSCIC) dataset</td><td>Direct mapping from data set of consultant numbers for each specialty</td><td><table><tr><td>Specialty</td><td>Value</td></tr><tr><td>Acute</td><td>104</td></tr><tr><td>Geriatric</td><td>1046</td></tr><tr><td>‘other’</td><td>8412</td></tr></table></td></tr>
<tr><td>Initial trained doctors age profile</td><td>Very High</td><td>NHS HSCIC dataset</td><td>Direct mapping from data set of consultant ages for each specialty</td><td>Available on request</td></tr>
</table>

Model element/ variable	Data confidence rating	Source of data/assumption	Validation	Data/assumption
Trained specialist doctor attrition rate	Medium	NHS HSCIC data set (2013)	Pre-retirement attrition is held at 3.33% and 3.16% for men and women respectively, for acute physicians and geriatric physicians. Pre-retirement attrition is held at 2.07% and 1.75% for men and women respectively, for 'other' physicians. This is calculated from the HSCIC data set by evaluating where persons appear and disappear from the workforce over the last 10 years (where GMC number is used as a unique identifier). Retirement (leavers over 50) caused attrition varies and increases by age based upon the same calculation from the HSCIC data set	Acute and Geriatric  'Other' 

Model element/ variable	Data confidence rating	Source of data/assumption	Validation	Data/assumption
Trained specialist doctor participation rate	Very high	NHS HSCIC dataset	Direct mapping from data set of consultant participation rates for each specialty. Change over time based on Delphi parameters	Available on request
Specialty contribution to acute care	Medium	2011 census of consultant physicians and medical registrars in the UK	Average ratio of specialties PAs per week compared to specialties acute PAs per week. Varied with time according to Delphi results per specialty	**Specialty** / **Value at 2013** **Acute** 100% **Geriatric** 15.5% **'Other'** 10.3%

Data confidence rating key

Level	Definition
Very High	Referenced medical data source. Direct one-to-one mapping of data to input variable
High	Referenced medical data source, but not a direct one-to-one mapping to the variable
Medium	Based on a data source with assumptions to map to model structure (may be older/incomplete data) or subject matter expert judgment
Low	Referenced to a similar data / CFWI expert judgment

None	Value assigned but no confidence in the data value
Not Applicable	Not applicable to the current model set up
Blank	No data confidence level asigned

Demand modelling data, validation and assumptions

Model element/ variable	Data confidence rating	Source of data/assumption	Validation	Data/assumption
HES outpatient statistics 2012	Very High	Used as one of three activity data sets to weight population growth impact on demand by age and gender of patient	Direct mapping	Used directly from website. Available on request
HES inpatient statistics 2012	Very High	Used as one of three activity data sets to weight population growth impact on demand by age and gender of patient	Direct mapping	Used directly from website. Available on request
ONS 2012 based population forecast	Very High	Used as a prediction for population growth	Direct mapping	Used directly from website. Available on request
Assumed yearly increase in productivity	Low	ONS Public Service Productivity Estimates: Healthcare, 2010	Direct mapping	0.4 per cent

Annex C: Scenario generation summary

In this Annex we set out in more detail the four challenging but plausible scenarios that were created by participants at the CfWI acute medical care scenario generation workshop held in September 2013. These driving forces and scenarios were developed via a tried-and-tested process by a range of expert stakeholders to identify a range of high-impact, high-uncertainty clusters for modelling purposes.

The four scenarios do not represent the views of any single organisation such as the CfWI, the DH, HEE or any professional body, nor can they be attributed to individual workshop participants.

The four challenging but plausible scenarios developed for the next 20 years (2013 to 2033) were:

- **Scenario 1: 'Welcome to the USA'** – Imbalance of acute and elective care, coupled with failure to increase generalism in early training
- **Scenario 2: 'Losing the NHS by default'** – Failure to increase generalism in early training, coupled with fragmentation of health and social care
- **Scenario 3: 'Great care, great training'** – More generalism in early training, coupled with integration of health and social care
- **Scenario 4: 'Sunny uplands'** – Balance of acute and elective care, coupled with more generalism in early training.

Table C1: High-impact, high-uncertainty clusters from the CfWI scenario generation process

		Cluster A		Cluster F	
		Imbalance of acute and elective care	Balance of acute and elective care	Fragmentation of health and social care	Integration of health and social care
Cluster J	Increase in generalism	N/A	Scenario 4	N/A	Scenario 3
	Decrease in generalism	Scenario 1	N/A	Scenario 2	N/A

Source: CfWI scenario generation workshop, September 2013

Scenario 1: 'Welcome to the USA'

SCENARIO Imbalance of acute and elective care, coupled with failure to increase generalism in early training ('Welcome to the USA')

GROUP MEMBERS
Dr Rachel Bousfield
Dr Mike Jones
Dr Nelson Lo
Dr Georgina Russell
Scribe: Jack Lawrence

2013

By the end of 2014, the expected shift towards more generalism in medical education has not materialised. Trainees do not choose core medical training, and there are renewed calls from the profession and some sections of the population for more super-specialists. This increases pressure on the acute medical specialties as workloads remain unmanageable.

A lack of funding for social care – coupled with no change to GP out-of-hours services – constrains the hoped-for shift of care into the community. This further increases pressure on acute care teams in hospitals, including doctors.

Britain continues to suffer financially as oil and power prices soar. The Treasury cuts spending and hospitals feel further financial pressures as national debt rises. Throughout the decade acute medical staff must deal with increasingly complex patients as well as increasing public expectations about 7/7 care. The falling attractiveness of the profession continues to reduce the number of doctors-in-training entering acute and general internal medicine training. The supply of new clinicians is at risk of falling well short of demand. Acute and general internal medics burnout, increasing reliance on agency staff and locums to fill rota gaps. The attractiveness of the acute specialty plummets along with staff morale. Bright school-leavers choose computer science degrees over medicine while qualified staff look abroad for jobs.

2023

Through the 2020s hospitals fail to meet demand for acute care as they focus on delivering more lucrative elective procedures. Public confidence in the NHS drops, creating a shift to private healthcare for those who can afford it. For those who can't, the lack of healthcare provision leads to more severe presentations of disease and an overburdened NHS. Increasing health inequalities and a sicker underclass lead to falling life expectancy with a general increase in morbidity and mortality. This results in fewer people working and contributing to the economy, and thus a reduction in gross domestic product (GDP). There is increased fragmentation between primary, secondary and social care. Differing IT systems and work priorities make joined-up care impossible which contributes to worsening health inequalities.

2033

In the 2030s potential medics see that there is significant money to be made working in private healthcare and the professional culture shifts. More people go into medicine expecting to work in a private system, motivated and incentivised financially rather than by a desire to help others. The south-east of England fares better than other regions but generally the NHS faces struggles with recruitment compared to its private competitors.

Scenario 2: 'Losing the NHS by default'

SCENARIO Failure to increase generalism in early training, coupled with fragmentation of health and social care ('Losing the NHS by default')

GROUP MEMBERS Fiona Ball
Dr Jane Fitch
Dr David Marshall
Professor David Sowden
Scribe: Paul Morgan

2013

Following a General Election in 2015, shortages in the NHS remain and in some instances intensify due to a period of austerity. The political focus remains on elective care. There is unwillingness, due to lack of time, or an inability, due to absence of appropriate investment, to embrace innovative technology and new workforce models due to funding shortages. The system's over-reliance on doctors (especially those in training) continues. The lack of investment also results in stagnation of training numbers. The public continues to overuse A&E services, leading to increased care rationing and acute specialties becoming less attractive. Recruitment fill-rates decline and sickness rates increase, leading to a rise in unplanned and increasingly frequent service closures.

Health inequalities intensify due to increasing care provision inequity. In some parts of the country primary care collapses under the pressure caused by secondary care facilities closing or unable to remain open 24/7. Service in the acute care sector is increasingly provided by the private sector, which exacerbates NHS staff shortages as the private sector maintains its lack of involvement and investment in training its future workforce. The growth in the private sector exacerbates health inequalities. This increases morbidity/mortality, especially in the poorest population groups.

2023

After the 2020 elections a new manifesto and new policies shift the emphasis of healthcare. Incentives are put in place focusing on underperforming units and potentially cost-effective technological advances. Public expectations rise. Residential care homes are responsible for demand management; there are enhanced models of social care and voluntary sector increases, mainly made up of families and 'neighbours'. The NHS increasingly invests in a non-medical workforce, where the training pipeline is shorter. This reduces reliance on doctors, while a new immigration policy attracts more non-medical healthcare professionals from Commonwealth countries. During the electoral cycle, a clear exposition of what is core in NHS funding and what is subject to a co-payment system results in an increasing voluntary expenditure on healthcare by those able to do so. Overall the percentage of GDP spent on health increases; there is a consequent increase in private medically delivered healthcare provision.

Medicine is seen as an increasingly attractive career for those seeking good incomes, which further increases geographic inequalities in care provision. Health inequalities worsen. The attractiveness of acute specialities declines, resulting in difficulties recruiting UK doctors to the NHS; the Royal Colleges and the BMA reflect the privatisation of medicine, increasing the development and use of the private healthcare service. Belief in the NHS declines. The service is staffed mainly by non-doctors.

2033 By 2033 the NHS becomes the provider for those unable to pay for private care and ultimately is lost by default.

Scenario 3: 'Great care, great training'

SCENARIO More generalism in early training, coupled with integration of health and social care ('Great care, great training')

GROUP MEMBERS
Aaron Haile
Wyn Jones
Pauline Milne
Dr Zoe Wyrko
Scribe: Ian Edwards

2013 In 2014 – following the Future Hospital Commission and the *Shape of Training* review(Greenaway, 2014) – there is a shift towards more generalism in medical training. The Francis report (Francis, 2013) leads to reconfiguration of multi-professional teams and the General Medical Council changes medical supervision and training models. Medical trainees feel valued and supported and this increases the attractiveness of the acute specialties. There is a re-distribution of training posts in favour of core medical training. There is also an increase in fill-rates for medical training and a virtuous circle is created. The geographic distribution of training places changes and new roles develop. Overall, the service benefits from better training and regulation.

Trainees increasingly realise they will need to move around (in terms of both specialty and geography) to contribute to nationwide service improvement. This ethos among doctors-in-training spreads to the devolved nations and in some cases further afield in the European Economic Area (EEA). Flexible careers become more possible and the status of non-training posts increases. This enables trainees to step in and out of training throughout their careers.

There is increased funding for health, public health and social care. This results in effective integration across primary, secondary and social care. Public health initiatives educate the public about the most appropriate ways to access care.

2023 There is a greater focus on the use of technology and technological innovations. Technology is consistently used in training programmes and is easily adopted by tech-savvy doctors-in-training. By 2025, telehealth and remote monitoring become the norm.

2033 By front-loading from 2014 initiatives to improve training, technology, public health and expectations, the quality of care has improved by 2033. This results in lower co-morbidity and mortality rates. The health of the whole population improves and GDP increases as a larger proportion of the population stay healthier and of working age for longer.

Scenario 4: 'Deep dive to the sunny uplands'

SCENARIO Balance of acute and elective care, coupled with more generalism in early training ('Deep dive to the sunny uplands')

GROUP MEMBERS Professor Bill Burr
Dr Helen Cugnoni
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Dr Emma Rowland
Scribe: Jess Nandhra

2013

From 2013, government targets are service-focused, creating a perceived separation between acute and elective services. This is mainly due to the Government financially rewarding met targets and penalising 'failure'. Due to constrained resources, targets are missed by the acute workforce which is then penalised, while the elective workforce does not experience the same limitations and is able to meet targets and achieve rewards. This creates disparity in supply between the two services, because the financially rewarded areas are more attractive to recruits. Poor recruitment to the acute specialties is compounded by the perception that acute services are a dumping ground for excess need.

The financial penalties within acute services also inhibit the acute specialties' ability to deliver training effectively, while the financial rewards received by elective services allow for higher-quality training. Again, doctors-in-training are more attracted to the elective specialties.

Early training and medical careers do not include enough generalist training. Postgraduate training does not prepare doctors for post-education and training roles. As a result, careers in acute service roles are perceived poorly by doctors-in-training, while specialists are poorly prepared to deliver acute care.

In 2015 commissioning boards introduce policy changes to rebalance targets, so acute care is equally rewarded and training is valued. Training time is included in consultant contracts, creating equity in training distribution across specialties and across the country.

2023

By 2023, acute and elective care are recognised and rewarded equally, and unite in service provision. As a result, the number of trainees in acute medicine increases. Acute and elective services deliver early training, which ensures appropriate preparation for later education, training and work.

Health and social care systems become integrated, allowing easy secure access to records across primary, secondary and social care. Investment in IT provides services such as telehealth and telecare. Clinical standards are developed for the acute specialties and the quality of care improves. Measures are in place so that immigration and emigration are in balance.

HEE introduces measures that encourage local education providers (LEPs) to incentivise funding of acute health care needs with significant reward for quality. This leads to a shift in focus from targets to outcomes. The rearrangement of training provides appropriately skilled practitioners with knowledge of specialties that support and complement acute care.

2033 By 2033, the status of acute specialties rises and recruitment is easy. Staff feel valued and the system is easier to steer.

Annex D: Delphi panel judgments

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

Supply uncertainties

The answers to the questions below are used as key parameters that change over time within the supply model developed. The Delphi panel only quantified values at 2033. For quantification at points between the start of the simulation and 2033, these values are scaled. For example, if the retirement age is said to increase by four years by the end of the simulation (2033), then at the mid-point of the simulation, the retirement age is two years higher than at the start.

- What do you think will be the **AVERAGE PARTICIPATION RATE** (full and part time working) of (acute medical care) trained physicians (CCT holders) by 2033, by gender?
- What do you think will be the **AVERAGE RETIREMENT AGE** of (acute medical care) trained physicians (CCT holders) by 2033?
- By 2033, what will the average individual contribution, of physicians from geriatric medicine and 'other' medicine, be to acute medical care?

Supply parameters at 2033	Change in participation rate – men	Change in participation rate – women	Change in retirement age	Geriatric future contribution to acute care	'Other' future contribution to acute care
Scenario 1	- 8%	- 13%	- 2 years	38.8%	9.9%
Scenario 2	- 9%	- 8%	- 2 years	31.0%	9.9%
Scenario 3	- 4%	- 8%	+ 3 years	23.3%	11.8%
Scenario 4	- 4%	- 8%	+ 3 years	23.3%	13.7%

Demand uncertainties

The answers to the questions below are used to calculate the change in level of demand from current values throughout the forecasts until 2033. Each of the future demand questions considers the percentage change in

demand due to specific parameters. Each of the parameters is mutually exclusive from the other. Each of the percentage change parameters at 2033 are multiplied by the current demand value to predict the future demand. In addition, a further multiplier was calculated using ONS demographic projections to assess how the changing population will impact demand. This is also shown below, but was not quantified as part of the Delphi process.

- By 2033 will individual patient need for (acute medical care) physician time change, on average, relative to today?

- By 2033, as a result of workforce efficiency and productivity, will more or less (acute medical care) physician time be needed to meet the same amount of patient need, relative to today?

The values below indicate the median change in future demand as anticipated by the Delphi panellists looking ahead 20 years. A value of 1.75, for example, indicates a 75 per cent increase over that period. A value of 0.25 would indicate a 75 per cent decrease.

Demand parameters at 2033	Multiplier due to 0.4 per cent increase in productivity per year	Multiplier due to population growth and ageing population	Multiplier due to change in patient need	Multiplier due to change in productivity and efficiency	Total change in demand
Scenario 1	0.916	1.32	1.50	1.25	2.27
Scenario 2			1.48	1.20	2.15
Scenario 3			1.13	0.95	1.30
Scenario 4			1.13	1.00	1.37

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