CENTRE FOR WORKFORCE INTELLIGENCE

SHAPE OF THE MEDICAL WORKFORCE: INFORMING MEDICAL TRAINING NUMBERS

August 2011

www.cfwi.org.uk

SUMMARY

1. Introduction

The Centre for Workforce Intelligence (CfWI) is publishing recommendations for medical training numbers in the next two to four years, by specialty and geography. Last year we made recommendations for medical training numbers looking one year ahead to 2011. This year we provide a medium-term view, with recommendations that will have their full impact on the future trained workforce by 2020. The new approach to our recommendations will support more effective planning and implementation.

The recommendations in this report take account of the following:

- The evidence submitted by the Department of Health (DH) in 2009 to the Doctors and Dentists Review Body (DDRB) *Review Body on Doctors' and Dentists' Remuneration; Review for 2009,* (DH, 2008a) which suggested that a planning assumption of around 6300 specialty training posts would meet future predicted demand for the medical workforce. Subsequent discussions with the profession and employers, led to a revised level of around 6500 specialty training posts and that at least half of those should be in General Practice (DH, 2008b).
- That effective workforce planning requires a steady and consistent approach and should avoid large changes in any one year.
- The need to consider the impact of apparently small reductions in training numbers over time. A small sustained reduction in training numbers multiplies through the training years and can have a significant impact on service.
- The need for a transition plan so that implementation and impact of agreed changes can be monitored.
- That we do not yet know enough about the impact of changes in service delivery and the financial environment on the future demand of the medical workforce.

2. Recommendations

Our recommendations fall into two areas:

1. recommendations to help improve planning in the future

2. specific recommendations for each specialty.

General recommendations

We recommend that system wide agreement is reached on the current approach to allocate additional national training numbers (NTNs) beyond the agreed level of 6500 entry-level posts. This adds to the overall stock of trainees and more Certificate of Completion of Training (CCT) holders than planned.

We recommend that a single approach is taken by all parties in planning the future medical workforce. This will facilitate reconciling the data and a better shared understanding of current and future risks in the system.

Specialty recommendations

Our specialty recommendations have four elements:

1. changes to the number of NTNs, and therefore the future estimated number of entry level posts[1] for recruitment

2. the proposed transition period for any increase or reduction

3. recommendations on geographical allocation

4. a date for the next review.

An explanation for all our recommendations can be found in each specialty **summary sheet.** This builds on the evidence presented in each **fact sheet** (Annex 1a).

The current available evidence suggests that the majority of specialties are either currently in balance or that previous growth has not yet worked through the system and so further changes are not warranted at this time.

The impact of the recommendations in this report, if we assume the current rate of attrition and that all training posts are filled, will be:

- an overall **increase of 283 entry-level** specialty training posts
- an overall **decrease of 167 entry-level training posts for hospital-based specialties**
- an **increase in General Practice (GP) training posts of 450** to reach a stable number of 3250 by 2014
- an overall **increase** in trainee stock of **544 full-time equivalent (FTE)** if we include GP trainees
- an overall **reduction** in trainee stock **1106 FTE** when we exclude GP trainees
- by 2014 we estimate that the average number of entry-level posts for specialty training will be around **6511**

[1] When we refer to entry level training posts we refer to the total number of entry level posts at ST 1 , 3 and 4 addressing the different training approaches of different specialties: run-though and uncoupled.

- by 2020 we estimate that England will be producing around **5898 FTE Certificate of Completion of Training (CCT) holders** of which **3132 will be in GP** and 2766 will be in the remaining specialties.

Specific recommendations include:

- We recommend that England continues to **increase the number of GP training posts** so that we achieve a total shift in numbers to around 3250 within four years, by contracting national training numbers (NTNs) and core training opportunities in hospital based specialties. This figure is required to maintain the growth in the GP workforce at historical levels.

  Based on current evidence, this shift cannot be fully met by reductions across the hospital based specialties in the time scale. Further modification and review will be needed across all Specialty Training Year 1 (ST1) and Core Training Year 1 (CT1) entry-level posts in the coming years.

- We have also recommended small to moderate **increases** in **Allergy, Cardiothoracic Surgery, Community Sexual and Reproductive Health, Dermatology and Geriatric Medicine** and we have specified a small increase in the sub specialty of **Interventional Radiology**.

- We have recommended moderate **reductions** in **Anaesthetics, General Surgery, Obstetrics and Gynaecology, Trauma and Orthopaedic Surgery, Otorhinolaryngology and Renal Medicine**. A transition plan will be needed to implement the reductions, so that the service can handle the change.

Although outside the scope of this report, we also recommend that work is done to align core training opportunities with specialty training opportunities. This will minimise the risk of trainees choosing core training opportunities in specialist areas where their future prospects of specialty training are limited and also will encourage trainees to choose specialties where we predict a greater demand in the future, for doctors with a CCT. This is described in more detail in section 2.3

3. Next steps

The recommendations in this report are submitted to the Department of Health. The DH will then charge Medical Education England (MEE) and strategic health authorities (SHA) (or their equivalents in the future), through the Joint Working Group (JWG) to implement the agreed recommendations. The JWG has the remit, working with SHAs, employers, the royal colleges and deans, to agree a transition plan for implementation and then review progress.

We will review and monitor progress on the implementation of accepted recommendations in this report over a three-yearly cycle (Annex 1c). Some specialties will undergo a deeper

analysis this year (2011–2012) to review future demand based on new models of service delivery, and this will inform future thinking for other specialties.

If you would like to comment on this report please email **enquiries@cfwi.org.uk**. The CfWI looks forward to building further on this work.

1 SUMMARY OF RECOMMENDATIONS

1.1 Background

The CfWI formally opened on 1 July 2010. One of our initial pieces of work, commissioned by the Department of Health, was to undertake a project to inform debate and decisions on the medical workforce. The first report published in August 2010 informed planning decisions on medical specialty training numbers for the following year and included identifying medical specialities at risk of oversupply or undersupply and any geographical imbalances.

This year we make recommendations on medical training numbers over the next two to four years by specialty and geography. This includes recommendations on the pace of change. This new approach provides employers and the profession with guidance over the medium-term, at a time of great change, offering a clear direction of travel and a timescale that supports implementation.

Alongside this work there are three other reports that we recommend to the reader.

- *The shape of the medical workforce: Starting the debate on the future shape of the consultant workforce.* This report for leaders, builds on work carried out earlier this year on the future shape of the consultant workforce. The report aims to stimulate debate with employers and the profession on the future workforce and will underpin the work we will do later this year with employers and eight Royal Colleges as part of the proposed 'deep dive' work. (Annex 1c) (Available at www.cfwi.org.uk in August 2011)

- A think piece called *Future Shape of the Healthcare Workforce* which describes the output from a parallel piece of work involving a wide range of professional representatives. Using the CfWI's pathway planning approach to understand the changes that have already taken place in healthcare and the impact this has had on the workforce, we introduce one approach to horizon scanning to look to the future. This think piece will inform future work on the medical workforce and so we invite contributions to the approach and next steps. (Available at www.cfwi.org.uk in August 2011)

- A report called *Migration Advisory Committee: Shortage Occupation Update, Healthcare Profession Submission 2011* (CfWI, 2011) that outlines the recommendations given to the Migration Advisory Committee. (Available at www.cfwi.org.uk in October 2011)

1.1.1 Policy context

The NHS is facing unprecedented change with the challenge of finding £20 billion savings to be reinvested in front line services. The new focus is on improved outcomes for patients

supported by research, innovation and productivity (QIPP). *Equity and excellence: Liberating the NHS* (DH, 2010)

Transforming community services *Transforming community services; enabling new patterns of provision* (DH, 2009) will shift care closer to home and reduce unnecessary admissions. This will change not only the nature of workforce requirements but also where healthcare will be provided in the future.

The structure of the NHS is changing. Following the report by the Futures Forum *NHS Future Forum recommendations to Government* (NHS Future Forum, 13 June 2011) there will be a national commissioning board, involvement of clinicians in future commissioning, with strengthened responsibilities for GPs in commissioning consortia.

In the new education, training and workforce planning system employers will be at the centre of decision making, driving future demand through a bottom up approach to workforce planning. It is anticipated that deanery functions will sit within new local education and training boards (LETBs), previously referred to as 'skills networks'.

There will also be a new national body, Health Education England (HEE), providing governance and assurance over the investment of the multi-professional education and training levy (MPET). The CfWI will continue as an independent body, working closely with HEE and supporting its work as well as providing intelligence on workforce planning across health and social care systems. Full governance arrangements are yet to be confirmed for this new system.

Not enough is yet known about the impact of these changes on future demand for the medical workforce and this has been taken into account in the recommendations in this report. However the new system is designed to support a more demand-led workforce planning system and this will help with future planning.

1.2 The purpose of this report

The specific objective of this phase of the project is to make recommendations to inform the future recruitment to medical training over the medium term. We recommend the changes are fully implemented by 2014, with the full impact on the numbers completing training by 2020.

The recommendations include a view on:

- the nature of any change needed
- the pace of this change
- geographical imbalances that need to be addressed

- a year for the next review.

1.3 Specialties and fact sheets

According to the General Medical Council approved curricula, there are 61 medical specialties. These are represented in this report in 56 **fact sheets,** containing the detailed evidence available to us at this point in time.

- We do not cover Pharmaceutical Medicine as this is a non-NHS specialty.
- We combine Acute Internal Medicine with General Internal Medicine.
- We combine Medical Microbiology with Medical Virology.
- We combine Tropical Medicine with Infectious Diseases.

In addition, this year we have included a fact sheet on Academic Medicine, making 57 fact sheets in total.

All specialty fact sheets and associated summary sheets can be found at Annex 1a. They will also be made available online at www.cfwi.org.uk.

1.4 What's not included in this report?

This work does **not** include:

- UK-wide recommendations. This report is for England only, as the CfWI is contracted by the Department of Health in England only.
- Modelling or analysis of the trust doctors, clinical fellows, staff grades and associate specialists as the data is not thought to be reliable at this stage.
- Modelling or analysis of the impact of internal UK migration as the information is not available.
- Detailed demand modelling: although the recommendations do take account of service activity data, health indicators and consultant vacancies.
- The future shape of training, as this work falls within the remit of Medical Education England (MEE). We will work closely with the project teams as this work progresses so our future recommendations take account of the outcomes.

1.5 The process for making recommendations

In reaching our recommendations we have:

- Worked with all the specialties and their lead deans to capture the policy drivers, the evidence base, the best available data and the professional view.

- Agreed with each specialty the assumptions that go into the modelling for participation rates, retirements, attrition and actual length of training.

- Sought, and where possible captured, the views of employers.

In addition, independent information has been considered in relation to vacancy rates, changing health needs of the population, service activity and weighted capitation, to gain an understanding of geographical imbalance.

We then analysed this information using the models that have been developed for this purpose.

For more detail on the approach, engagement, data sources, modelling for hospital specialties and General Practice, and an explanation on the use of data during this work please see Annexes 3 to 7.

1.5.1 Where will you find the detailed specialty information?

The evidence and analysis of data forms the basis of the **fact sheets** which are co- produced with each specialty or college and the lead dean. The fact sheets then inform a shorter **summary sheet** where we consider the impact of the evidence and analysis and record our recommendations (Annex 1c).

Each recommendation includes a comment on changes to the number of NTNs, a pace of change for implementation, geographical allocation where appropriate, and a proposed year for the next review of that particular specialty.

In some instances it has not been possible to reach full agreement and the concerns of the profession have been documented within the summary sheets. We have an agreement with these specialties that we will work with them to improve the evidence, develop a shared understanding and, where possible, get closer agreement in the future.

1.5.2 Principles for making recommendations

As part of the evidence for the DDRB review in 2009 *the Review Body on Doctors' and Dentists' Remuneration; Review for 2009*, (DH, 2008a), work was presented that offered guidance on planning assumptions for the future medical workforce. This included guidance that around 6300 specialty training opportunities would provide the right level of trained workforce for England. Subsequent discussions with DH, the profession and employers, through the Joint Working group (JWG), Interim Arrangements for Review of Postgraduate Medical of Specialty Training Numbers (Paper SNJWG61 Postgraduate Medical Specialty Training Numbers Working Group 4 March 2011) confirmed that around 6500 specialty

training posts would be nearer the level we should be working to, for the predicted future workforce. Lord Darzi's *A high quality workforce: NHS Next Stage Review* (DH, 2008b) further supported that this level includes a shift so that at least half of those specialty training opportunities should be in General Practice.

We recognise that further work is now due to review this number in the light of changes within the NHS and this will be a focus for work later this year. However for the purposes of this report this level remains the most up to date planning guidance currently available to the system.

This report makes recommendations spanning the next four years. The impact of our recommendations is firstly that they bring us closer, in real terms, to the guidance noted above. The timescale for implementation varies as it is dependent on issues specific to individual specialties.

In making our recommendations we adopted an approach that:

- Considers the available evidence and analysis.
- Recognises that that effective workforce planning requires a steady and consistent approach and should avoid large changes in any one year.
- Sets a pace of change to support full implementation.
- Includes the views of the service, where possible, on future demand and takes account of the fact that we do not yet know enough about the impact of changes in service delivery and the financial environment on the future demand of the medical workforce.
- Considers current and future demand including the health of the population; activity data now and projected, based on age of the population and vacancy rates.
- Takes account of the impact of reductions on total trainee capacity and therefore service. What appears to be a small sustained reduction in training numbers, as it multiplies through the training years, can have a significant impact on service.
- Recognises the need for a transition plan and review so that implementation and impact of agreed changes can be monitored.
- Makes recommendations on geographical allocation when decreasing or increasing posts only.

1.6 Explaining the recommendations

Recommendations fall into three types: increasing, decreasing or no change.

1.6.1 Assumptions

The CfWI recommendations assume the following:

- that all posts are filled
- that attrition continues at the current rate
- that actual length of training, modelled for each individual specialty, carries on as now (this takes account of all delays such as participation rates and deferrals)

1.6.2 Pattern of recommendations

This section summarises the overall pattern of recommendations with some examples.

Increasing training numbers

- Where there is a clear need for growth then sustained increases will be recommended, for example in General Practice.
- Where growth is needed and the specialty is already currently growing but at a rate that may be too slow then a small time limited increase is recommended, for example in Geriatric Medicine.

No change to training numbers

- Where the evidence points to a stable situation or where there is current growth, and when projected forward supply will meet the predicted demand.
    - For some specialties that demand will be met by 2020 e.g. Infectious Diseases, Medical Oncology, Paediatric Cardiology, Plastic Surgery and Paediatrics.
    - In other specialties current growth will not meet demand by 2020 e.g. Clinical Radiology and Neurology. In such cases we will need an early review as action may be needed to boost supply.

- Where a specialty appears to be in oversupply but recruitment is an issue, leading to a mismatch of potential and actual supply, then a recommendation of no change has been made. Further work is needed to monitor fill rates and review. Examples include Haematology and Rheumatology.

- Where enough is not currently known and further work is needed (e.g. when there is no clear, evidence based view on future supply needs, the service delivery model is changing, where we need to understand the interplay with other specialties, the impact of the development of new specialties or sub specialties and data quality).

Examples include Psychiatry, Clinical Oncology and Nuclear Medicine, and Medical Ophthalmology.

- Where agreement has not been reached between the CfWI and the college or the specialty society on either the recommendation or the underlying data, then minimal changes have been made with the intention to review with the specialty this year or next, for example Urology.

Decreasing training numbers

- Where there is a clear oversupply, recommendations are made to reduce training numbers. This may often be associated with an early review of our recommendations.

- Where this is a moderate or small oversupply then the CfWI will usually recommend a small reduction to fine tune this specialty. This may be time limited or a sustained reduction.

1.6.3 Geographical dimension and weighted capitation

Where we have identified that specialty training numbers for a particular specialty should be reduced or increased, we also make recommendations on where those reductions or increases should fall. For this report the key measure used is weighted capitation. Weighted capitation is a commonly used methodology within the NHS for the allocation of resources.

The CfWI recognises other factors are important and contribute to the future workforce needs and current needs of trainees, for example:

- the quality and availability of training places in the specialty
- trends in mobility of trainees
- varying service delivery models
- vacancy rates for consultants
- activity by specialty.

1.6.3.1 Weighted capitation

Weighted capitation is a measure of health need for a region based on the population, including age profile, levels of existing illness and other factors. We identify those regions where the medical workforce is above or below the number that would be expected in relation to weighted capitation for the region. For each deanery and particular specialty, the existing workforce for consultants and doctors in training to CCT is compared against a theoretical workforce distributed according to weighted capitation.

In addition to weighted capitation, geographical inequalities were assessed using intelligence gathered during engagement with specialty representatives.

Where we recommend a reduction in training numbers for a given specialty, we identify regions for priority reductions where they are over capitated on doctors in training and consultants. Similarly, where we recommend an increase in training numbers, then regions under capitated for consultants and trainees are prioritised for growth.

We recognise the need for a more widely accepted mechanism for the geographical allocation of trainees, and that any changes to geographical allocation must be carried out as part of a planned transition that takes account of service delivery.

More detail on weighted capitation is available in Annex 6.

1.7 Data and information issues

1.7.1 Data

Throughout this process it has proved difficult to reconcile the data sources available. This is partly due to different approaches within each part of the system and also the quality of data available. Comparing previous years has also proven to be difficult because of changes that have been implemented, either to the training pathway or to recruitment.

We can see annual fluctuations in recruitment and within this we do see that there has been a steady reduction in entry-level training numbers since 2008, with the Medical Programme Board (MPB) working through JWG towards a steady state of 6500 entry level specialty training posts. We have also seen a reduction in core training level one (CT1) posts.

The medical training system does not have a single agreed approach to planning future medical training numbers and so when data is shared, it can be difficult to reconcile data from different sources. In addition we can see that numbers vary within year and by year, as trainees change their status and further in year recruitment takes place. Variation in data seems to be an inherent part of the system. One area where there is often a mismatch is between the number of NTNs being recycled (after a trainee has relinquished their NTN on completion of training) and the number of recruitment posts.

1.7.2 National training numbers

Currently there is large gap between the approved number of specialty training posts and the actual number of NTNs. There are several reasons for this (including flexible training, Out of Programme Experiences (OOPEs) and overfilling entry level posts available).

We also recognise that it is usual practice for NTNs to be recycled once trainees achieve their CCT and leave the training programme. We therefore need to find a way of reconciling the trend to increase NTNs when the entry level numbers have been set to avoid oversupply of CCT holders.

There are several ways we can make recommendations for medical specialty training numbers, for example by entry level posts or by considering the current stock of trainees.

The recommendations in this report are presented in terms of changes to NTNs over the next few years with a projection of what this could then mean for future entry level training posts by 2014 and for future CCT output by 2020.

Each year, depending on the specialty and any recent changes to the training programme, the number of NTNs to be freed up varies. Deanery numbers of recycled NTNs do not match the recruitment posts available, which in turn do not match the final state of play following recruitment.

We recommend that further work is needed to consider whether the current approach to expanding the number of NTNs in the system is the best approach when we have an agreed view on the entry level and future CCT output that is needed.

1.7.3 Current stock of trainees

The recommendations we make in this report will not affect the current stock of trainees. This number of trainees will work their way through the training system and in some instances we can predict an oversupply.

1.8 Impact of recommendations

Our modelling includes a delay factor for each specialty that takes account of actual length of training and attrition, and so for example assumes levels of participation rates and OOPEs for each specialty, based on historical trends. Our recommendations also assume a 100% fill rate.

If we assume the above remains constant, then our recommendations will have the following impact:

- an overall **increase of 283 entry-level** specialty training posts
- an overall **decrease of 167 entry-level training posts for hospital-based specialties**
- an **increase in GP training posts of 450** to reach a stable number of 3250 by 2014
- an overall **increase** in trainee stock of **544 full-time equivalent (FTE)** if we include GP trainees
- an overall **reduction** in trainee stock **1106 FTE** when we exclude GP trainees
- by 2014 we estimate that the average number of entry-level posts for specialty training will be around **6511**
- by 2020 we estimate that England will be producing around **5898 FTE CCT holders** of which **3132 will be in GP** and 2766 will be in the remaining specialties.

1.8.1 Summary of recommendations

Of the 56 specialties modelled, 38 require **no change** at this point in time. The reasons for this vary and the detail can be found in each specialty summary sheet (Annex 1a).

Around 10 specialties are thought to be in balance or still growing, based on the current evidence available. [These specialties are predicted to meet the college estimations of the number of future consultants in posts to deliver future services, within the next 10 to years]. For some of these specialties there are anxieties that they will not reach the required level. However, as they are still expanding and recent increases have not yet worked their way through the training pipeline, our view is that further increases at this time would be premature.

For a further 10 specialties we do not yet know enough about potential changes to service configurations, training pathways and future demand to signal an increase or a decrease.

For others we have concerns about the fill rate even in the setting of a healthy projection, understanding that unless improved fill rates are achieved, the projected supply will not be reached and so it is risky to reduce at this time.

For 11 specialties we have recommended **reductions** and a pace of change. For some, this reduction is small and time limited; for others, the impact will be greater. For these specialties the professions agree that a reduction is needed however we also recognise that the pace of change will need to be tested further with the service.

We have made recommendations for an **increase** in seven specialties. In some cases the increases are time limited, providing a bolus increase in supply. In others, the increases are to be sustained until further review.

Recognising the importance of managing the impact of decisions made in training, in most cases we have recommended a transition period of up to four years for the implementation of changes.

We recognise that some specialties have difficulty recruiting in some geographical areas and in some instances this creates a risk for the future, so we recommend that work is carried out to improve the competitiveness and attractiveness of those specialties to doctors in training. This will help specialties attract the right number of trainees to secure the required future supply.

Although outside the scope of this report, we recommend that work is done to align core training opportunities with specialty training opportunities. This will minimise the risk of trainees choosing core training opportunities where their future prospects of specialty training are limited and also will encourage trainees to choose specialties, where we predict a

greater demand in the future, for doctors with a CCT. This is described in more detail in section 2.3.

1.9 The recommendations table

Table 1 below lists our recommendations for each medical specialty considered in this report.

1.9.1 Explaining the summary table of recommendations

- The **first** column is the specialty name.

- The **second** column shows the average number of NTNs per year for each specialty, as used in the workforce model. This can differ greatly from year to year. Moreover, some specialities have only recently become uncoupled making historical comparisons difficult. Therefore it is estimated by dividing the total number of trainees by the average length of training. The number of trainees is based on the 2009 Deanery monitoring data. The deanery monitoring data for 2010 was not used in the modelling due to concerns of inconsistencies within the data that have not yet been verified. The average length of training is supplied by the appropriate Royal College and includes an agreed delay factor, for example to cover OOPEs, participation rates, exam failures and maternity leave, for each specialty.

  So in the second column you will find a number indicative of the average number of NTNs that are recycled per year. This number is unlikely to match that of the 2010 recruitment due to the variation of number of trainees per year. Moreover, there are a number of ways that the 2010 recruitment figures can be estimated. First, there is the number of posts authorised by JWG: around 3,000 posts. Second, there is the number of posts advertised and thirdly there is the number of posts actually recruited (which is about 4000). These figures represent slightly different ways of looking at 2010 recruitment. All can all be correct, yet might not agree. Our modelling figure is in the middle of these views.

  In taking this approach our aim is to move the system forward so that the number of available NTNs to be recycled more closely matches the number of approved entry level posts.

- The **third** column explains the CfWI recommendations. Recommendations are made over a two to four year period to reflect the degree of over and under supply and the magnitude of the change. This varies by specialty. Where a change is suggested this is expressed in terms of the change in number of NTNs from the average estimated number that are coming up for recycling and an associated pace for that change. The

fact sheets and summary sheets detail the evidence supporting each recommendation and can be found in Annex 1a.

- The **fourth** column estimates the impact of the recommendations on the future number of entry level specialty training posts by 2014, assuming all else remains constant.

- The **fifth** column is the indicative number of new CCT holders for 2020. The year 2020 was chosen as all the changes should have been implemented and trainees based on the new numbers should have completed their training.

- The **sixth and seventh** columns show when the CfWI recommendations should be reviewed.

- The **eighth** column shows the CfWI recommendations for change in geographical allocation. This is based on weighted caption. We recognise there are differing views on the use of weighted capitation for this purpose. Weighted capitation is discussed in more detail in Annex 6. For each specialty the rationale is detailed in each fact and summary sheet (Annex 1a).

Table 1 Recommendations

Specialty	Indicative number of NTNs recycled each year (now)	Recommendations on recruitment at entry point based on the status quo of recycled NTNs	Indicative number of new entries each year 2014	Indicative CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Anaesthetics Group							
Anaesthetics	370	Sustained reduction of 16 NTNs phased over three years, in addition to any ICM conversions.	354	321	2011	2011	As both Anaesthetics and ICM specialties have been identified for a more focused piece of work in 2011, we do not recommend any geographical reallocation of training posts at this point.
Emergency Medicine	180	Existing supply appropriate: assume no change needed at this time. Work is needed to address recruitment and retention of EM trainees as the priority.	180	163	2013	2011	
Intensive Care Medicine		Increase expected though not possible to quantify at this time. This increase will take place through conversion of some existing Anaesthetic posts to ICM (Data for this specialty is included in Anaesthetics).			2011	2011	
General Practice							
General Practice	2800	Increase of 450 entry level training posts, phased over the next 4 years. Meeting this increase will require action to address current career choices and to align core and specialty training opportunities.	3250	3134	2011	2011	Further work is required to understand areas of priority for the new posts.
Ophthalmology Group							
Ophthalmology	61	Existing supply appropriate: assume no change needed over the next 3 years. To include this specialty alongside the deep dive into Medical Ophthalmology.	61	60	2012		

Specialty	Indicative NTNs (now)	Recommendations	Indicative new entries (2014)	Avg CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Physicians Group							
Acute Internal Medicine/General (Internal) Medicine	52	Existing supply providing grow th, effect of shift to primary care and impact of QIPP needs to quantified before making changes to training numbers.	52	43	2013	2012	
Allergy	1.5	Increase by 2 NTNs w ithin the next 2 years and then resume original recruitment of an average of 1.5 recycled NTNs per year.	1.5	1	2014		Location of the new posts should be based on capacity to train
Audiological Medicine	3.5	Existing supply appropriate: assume no change needed over the next 3 years.	3.5	3	2013		
Cardiology	105	Existing supply appropriate: assume no change needed over the next 3 years.	105	87	2013		
Clinical Genetics	12	A one off reduction of 5 NTNs w ithin the next 2 years and then resume original recruitment (i.e. continue to recycle all NTNs after that).	12	11	2014		Prioritise reduction from London SHA. Aim not to reduce posts from South East Coast or East of England
Clinical Neurophysiology	7	Existing supply appropriate: assume no change needed over the next 5 years.	7	5	2015		
Clinical Pharmacology and Therapeutics	8	Existing supply appropriate: assume no change needed over the next 3 years.	8	6	2013		
Dermatology	42	Sustained increase of 6 NTNs to be phased in over the next 2 years.	48	38	2013		Prioritise the South East Coast, South West and East Midlands SHAs for increases in posts.

Specialty	Indicative NTNs (now)	Recommendations	Indicative new entries (2014)	Avg CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Physicians Group (Continued)							
Endocrinology and Diab	66	Existing supply appropriate: assume no change needed over the next 5 years.	66	55	2015		
Gastroenterology	95	Sustained reduction of 6 NTNs phased in over the next 2 years.	89	74	2015		Prioritise London SHA for a reduction in posts.
Genitourinary Medicine	30	Existing supply appropriate: assume no change needed over the next 4 years.	30	24	2014		
Geriatric Medicine	118	Increase of 15 NTNs in each of the next 3 years and then resume original of an average of 118 NTNs recycled each year.	118	94	2014	2012	Prioritise the East and West Midlands SHAs for an increase in posts. Conversely, London, the North East and Yorkshire and the Humber SHAs should not be priority areas for an increase until existing inequalities have been addressed.
Infectious diseases	19	Existing supply appropriate: assume no change needed over the next 3 years.	19	18	2015		
Medical Oncology	40	Existing supply appropriate: assume no change needed over the next 3 years.	40	29	2014		
Medical Ophthalmology	0.5	Existing supply appropriate: assume no change needed over the next 3 years.	0.5	0	2015	2012	
Neurology	37	Existing supply appropriate: assume no change needed over the next 3 years.	37	34	2012		
Occupational Medicine	8	Existing supply appropriate: assume no change needed over the next 3 years.	8	6	2015		
Palliative Medicine	48	Existing supply appropriate: assume no change needed over the next 3 years.	48	37	2014		
Rehabilitation Medicine	13	Existing supply appropriate: assume no change needed over the next 3 years.	13	10	2013		

Specialty	Indicative NTNs (now)	Recommendations	Indicative new entries (2014)	Avg CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Physicians Group (Continued)							
Renal Medicine	57	Sustained reduction of 25 NTNs phased over 4 years.	32	28	2014		Prioritise the London and the West Midlands SHAs for reductions in posts. Conversely, efforts should be made not to reduce posts from the South East Coast SHA until existing inequalities have
Respiratory medicine	124	Sustained reduction of 10 NTNs each year, phased over the next 2 years.	114	92	2015		Prioritise London and South Central SHAs for reductions in posts.
Rheumatology	50	Existing supply appropriate: assume no change needed over the next 5 years.	50	34	2015		
Sports & exercise medi	5	Existing supply appropriate: assume no change needed over the next 3 years.	5	4	2013		
Obstetrics and Gynaecology Group							
Obstetrics and Gynaecology	200	Sustained reduction of 40 NTNs phased over the next 4 years.	160	143	2014	2011	
Community Sexual & Reproductive Health	2	Sustained increase of 5 NTNs phased in over next three years. In2010 recruitment w as across a range of specialty years from ST1–ST4, in order to achieve a constant flow of CCTs.	7	7	2015		No change due to insufficient data on regional distribution of posts.
Paediatrics Group							
Paediatric cardiology	7	Existing supply appropriate: assume no change needed over the next 3 years.	7	6	2013	2012	
Paediatrics	300	Existing supply appropriate: assume no change needed over the next 3 years.	300	261	2014	2011	

Specialty	Indicative NTNs (now)	Recommendations	Indicative new entries (2014)	Avg CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Pathology Group							
Chemical Pathology	11	Existing supply appropriate: assume no change needed over the next 3 years.	11	11	2014		
Haematology	68	Existing supply appropriate: assume no change needed over the next 3 years.	68	64	2013		
Histopathology	70	Existing supply appropriate: assume no change needed over the next 3 years.	70	59	2013		
Immunology	6	Existing supply appropriate: assume no change needed over the next 4 years.	6	6	2015		
Medical Microbiology and Virology	35	Existing supply appropriate: assume no change needed over the next 3 years.	35	30	2014		
Public health							
Public health	44	Existing supply appropriate: assume no change needed over the next 3 years.	44	36	2014		
Psychiatry Group							
Child and Adolescent P	66	No change in training numbers, addressing recruitment and retention of trainees the priority.	66	48	2012		
Forensic Psychiatry	30	No change in training numbers, addressing recruitment and retention of trainees the priority.	30	23	2012	2012	

Specialty	Indicative NTNs (now)	Recommendations	Indicative new entries (2014)	Avg CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Psychiatry Group (Continued)							
General (adult) Psychiatry	177	No change in training numbers, addressing recruitment and retention of trainees the priority.	177	133	2014	2011	
Medical Psychotherapy	12	No change in training numbers, addressing recruitment and retention of trainees the priority.	12	10	2012	2012	
Psychiatry of Learning Disability	22	No change in training numbers, addressing recruitment and retention of trainees the priority.	22	16	2012		
Psychiatry of Old Age	68	No change in training numbers, addressing recruitment and retention of trainees the priority.	68	51	2012	2012	
Radiology Group							
Clinical Oncology	88	Existing supply appropriate: assume no change needed over the next 3 years.	88	66	2012	2012	
Clinical Radiology	173	Existing supply show ing grow th close to meeting current predicted demand. Further w ork is being carried out and until complete assume no change.	173	131	2012	2012	
Interventional Radiology		Expansion required. Recommend an initial real increase of 5 NTNs each year. New posts should **not** come from existing Clinical Radiology posts. The new posts should come from converting posts from other specialties and based on local need and local priorities.			2012	2012	The geographical location of additional posts should be determined by local need.
Nuclear Medicine	5	Existing supply appropriate: assume no change needed over the next 3 years.	5	4	2012	2012	

Specialty	Indicative NTNs (now)	Recommendations	Indicative new entries (2014)	Avg CCT output (2020)	Review Year	Deep Dive Year	Geographic recommendation
Surgery Group							
Cardiothoracic Surgery	12	Recruit 23 people to existing training posts in 2012. Review annually to balance the supply of newly qualified doctors and retirees. NB this recommendation is made by a national group that oversees this specialty.	12	11	2012		No change but efforts should be made to understand and address geographical inequalities in the consultant workforce.
General Surgery	158	Sustained reduction of 35 NTNs, phased in over the next 3 years.	123	109	2012		Prioritise London SHA for a reduction in training posts, while the East Midlands SHA should maintain training posts and consider further investigation into potential growth in training posts.
Neurosurgery	17	Sustained reduction of 3 NTNs, phased in over the next 3 years.	16	15	2014		Prioritise London SHA for a reductions in posts. Conversely, growth in training posts should be considered for the East Midlands, West Midlands and South East Coast SHAs.
Oral and Maxillofacial Surgery (OMFS)	22	Existing supply appropriate: assume no change needed over the next 3 years.	22	18	2014		
Otolaryngology (ENT)	45	Sustained reduction of 12 NTNs, phased in over the next 3 years.	33	32	2014	2011	
Paediatric Surgery	13	Reduction: removal of 14 MMC transition NTNs created in 2007 and 2008.	10	10	2014	2011	Depends on the location of MMC transition NTNs
Plastic Surgery	37	Existing supply appropriate: assume no change needed over the next 3 years.	37	37	2014		
Trauma and Orthopaedic Surgery	146	Sustained reduction of 30 NTNs, phased in over the next 3 years.	116	116	2013		
Urology	41	Existing supply appropriate: assume no change needed over the next 3 years.	41	39	2014	2012	
Total	**6228**		**6511**	**5903**			
Total (Excluding GPs	**3428**		**3261**	**2769**			

1.10 Specialty spotlight

In this section we highlight some specific issues that require further consideration by national and local bodies which have an interest in medical workforce planning.

Acute Internal Medicine

We recommend no change in Acute Internal Medicine in this report. However, we recognise the increasing activity in this specialty and wish to signal that an increase may well be required to meet future demand.

The current data does not accurately record activity or the contribution clinicians make to this specialist area while working in a different medical specialty. We also need to consider the future impact of Transforming Community Services (TCS) and the Quality, Innovation, Productivity and Prevention (QIPP) work, with a focus on reducing unplanned admissions.

We have agreed a deeper review is needed to look at the interplay between specialties within the medicine group, in 2012.

Clinical Radiology and Interventional Radiology

Clinical Radiology is a growing specialty and the positive impact that the radiology schools have had on recruitment is securing a solid and growing supply. The current projections show that we will not meet the college's predicted demand by 2020, but that it should be met by 2024, if no other action is taken. Alongside this, however, there is a growing demand for Interventional Radiology (IR) supported by national policy, patient outcomes drivers and employers' evidence.

We support an increase in Interventional Radiology (IR) in the next few years, although we recommend this is a cautious increase until we have a better understanding of demand and commitment to invest in this new role.

There is emerging evidence that future demand for Clinical Radiology may be greater than current evidence would suggest.

In order to preserve the current supply of clinical radiologists we recommend that increases in IR come from contraction in other specialties, not Clinical Radiology, and that this expansion in IR is driven by local need but within the realms of an increase of five nationally in the first instance.

We will carry out further work with the college in 2012 to quantify this and the future need for IR.

Emergency Medicine

According to our current data, Emergency Medicine (EM) is in balance when we consider the number of posts. One issue facing EM however is securing the supply from core training into specialty training. We recommend that consideration is given to how this can be achieved.

Further work will be done this year to consider the impact of a consultant-present service in EM, the impact on future consultant numbers and how to plan for and secure a future trainee supply when they recruit from a trainee pool that has a choice of specialty options.

General Practice

Further work is needed to understand why we are not yet attracting the right number of doctors in training into this specialty. We have agreed to carry out more in-depth work this year building on our new GP specific planning model to enhance current understanding of this specialty.

Our modelling also shows that even with the planned expansion we will not deliver the expected number of GP CCT holders by 2020.

Additional work is needed by the system to:

- secure 100 per cent fill rate, including working with medical schools and the Foundation Programme to improve opportunities and interest in General Practice
- encourage those returning to work back into General Practice
- address an imbalance of the number of CT 1 opportunities in other areas where we do not need growth, so that entry to General Practice becomes a competitive option.

Although our recommendations bring us closer to the level of training needed to balance hospital and General Practice specialties, we have not been able to do this within the level of 6,500 posts nor by 2013. Further work this year will consider how this can be achieved.

We support the current strategy to maintain the total number of opportunities with a clear shift within this to increase GP training posts; we believe this is more likely to encourage trainees to choose General Practice.

General Surgery, Trauma and Orthopaedic Surgery and Core Training

We recommend reduction in entry-level training opportunities in General Surgery and in Trauma and Orthopaedic Surgery. However, without an appropriate adjustment to the opportunities at core training level to meet the new specialty entry level, the efforts to

reshape the future output from training across all specialties will be hindered and we will continue to set career expectations for trainees that cannot be met (DH, 2008a).

Intensive Care Medicine and Anaesthetics

Intensive Care Medicine (ICM) is predicted to grow in coming years with the implementation of the new GMC approved curriculum. According to the latest available data there is an oversupply in Anaesthetics. It is likely that doctors who previously trained in Anaesthetics may choose ICM as a single CCT, consequently reducing the overall anaesthetics supply.

The college has also highlighted that they are aware of service changes underway that could result in the need for more anaesthetists than previously considered.

We recognise that further work is needed and we will carry out deeper work with the college this year. A close watch will be needed on the impact of ICM changes on Anaesthetics supply in future years.

Although we will be doing this deeper work this year, we still recommend that plans are in place to remove 16 NTNs over the next three years.

Obstetrics and Gynaecology

We recognise the recommended reduction in Obstetrics and Gynaecology may impact on the work previously done to achieve compliance with the Working Time Directive. The pace of change will need to be managed locally to achieve the recommended decreases.

Further work will be done with the college and the employers this year as part of a deep dive to review the future supply in the setting of a consultant-delivered service and new maternity pathways.

Psychiatry specialties

The need for mental health services is growing based on predicted future population need. Currently there is no projected need estimated by the profession or employers in the psychiatry specialties. There is difficulty recruiting at some levels and an issue securing supply from CT3 to ST4.

We have recommended no change this year. However, further work is needed to secure the future supply:

- to achieve a better understanding of likely future demand for psychiatric specialties
- to improve the attractiveness of the specialty, more trainees could be offered the opportunity to experience high-quality psychiatry posts early on in Foundation Training

- further work is needed on selection into core training and progression through specialty training.

The Medical Programme Board and the college are working to improve understanding in this area. The CfWI will build on this work later this year as part of the deep dive work with the college.

1.11 Next steps: the review process

This report will be submitted to the DH who will consider the recommendations with Medical Education England (MEE) and the Workforce Leadership Group, which has membership from all SHAs. The sub groups from each of these committees MPB and Workforce Availability Policy and Programme Implementation Group (WAPPIG) will then take forward implementation.

WAPPIG and MPB will charge the Joint Working Group to agree a transition plan with postgraduate deans, workforce directors and employers in each region and will monitor and review effective implementation, reporting back to the MPB and WAPPIG on progress.

Further reviews are built in, to monitor progress against the recommendations (Annex 1c). Reviews will take account of fill rates, including overfill, changes to the training pathway, changing patterns of participation and attrition as well as changes to service delivery and new developments that will have an impact on future supply.

We will develop a stronger demand-led approach for future work which will involve closer working with the employers, and emerging LETBs, and the profession.

We are keen to receive feedback on the planned review dates and to work with employers and the profession to make sure we carry out future work in a timely way which will meets their needs.

2 THE MEDICAL TRAINING PATHWAY

2.1 Introduction

Compared to other professions within the NHS, future planning of the medical workforce needs to be carried out further in advance to avoid a boom-and-bust scenario and to ensure that investment in training and developing the medical workforce is maximised to benefit patients.

It can take many years to see the impact of decisions made to reduce or increase the number of trainees, and the commitment to securing the right level of investment is an important part of successful planning.

The system also has to be sufficiently flexible to respond and adjust to change. Understanding the future needs of employers can be challenging because service commissioning cycles are far shorter that the medical training pipeline and we cannot always predict the impact of new innovations and treatments on services and their impact on the workforce.

Over the duration of a doctor's training, the nature of economic cycles cannot always be accurately predicted. In periods of economic downturn, there may be large numbers of medical trainees already in the system with expectations of employment in a particular specialty area, and with expectations of particular pay and conditions. Over time, things change and expectations may no longer be met.

To plan effectively, it is very important that we do not look at specialty training on its own, and instead, that we consider the whole training pathway. We need to identify and address risks and issues in a timely way to make sure the whole training pipeline is set up to deliver the required future supply.

2.2 The start of training: from undergraduate to Foundation Programme

2.2.1 Undergraduate training: workforce planning issues

Training the future medical workforce begins at undergraduate level. The length of undergraduate training is dictated by European Union (EU) Directives. The European Commission is currently consulting on whether 5,500 hours or six years is appropriate, while many medical schools across Europe wish to see a move towards outcomes-based requirements. Typically, students spend five years as undergraduates.

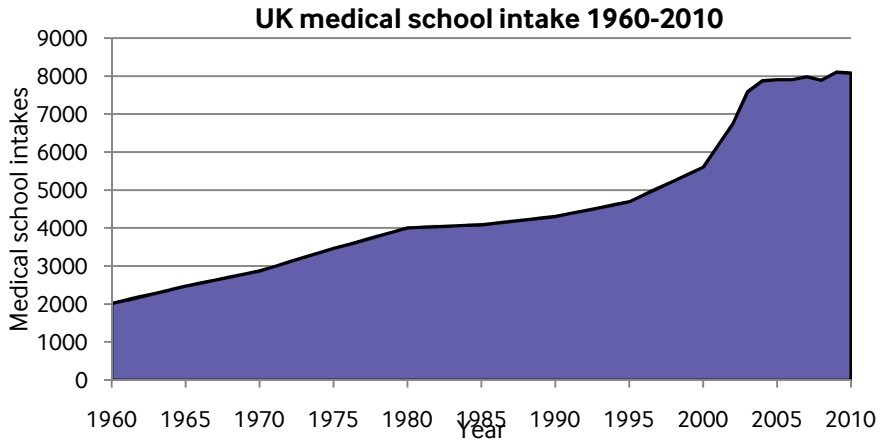
Medical school is the first stage of the pipeline that provides England, and the UK, with the future specialist medical workforce. When planning the future medical workforce it is important to realise the implications of changes in the medical student numbers. It takes approximately 12 years from entering medical school to gain a CCT and often longer if additional training or experience is sought. This is also the time it can take for the impact of

changes to be felt by the service. It is therefore also the timescale on which it is sensible to plan.

This section summarises the recent and current medical school student intake in the home nations.

UK medical school intake per year increased from 2,000 in 1960 to almost 8,000 in 2010. The increase was not linear; the rate fluctuated as shown in Figure 3. The late 1990s and early 2000s saw considerable increase in medical school intake (DH, 1997), before a plateau from 2004 onwards.

Figure1: UK medical school intake



Source: Higher Education Funding Council for England (HEFCE) 2010 Medical school intake

2.2.2 Current and future intake

According to the Higher Education Funding Council for England (HEFCE), medical school places for 2011/12 will remain at the 2010/11 levels in England (6,392 places), Northern Ireland (267), Scotland (850) and Wales (380). The numbers will vary slightly as medical schools are not able to predict completely accurately the numbers who will achieve the required A Level grades, and so the exact number of applicants accepted.

2.2.3 Foundation programme training: workforce planning issues

The new medical graduate first enters employment in the NHS as a Foundation Programme (FP) Doctor. Foundation Programme jobs are under an employment contract but also have a commitment to provide training in the course of that employment.

This means that medical workforce planning needs to consider the forecast demand for work at this level, the future workforce requirements of more senior trainees and the future CCT

workforce. This is in conjunction with the consideration of the commissioning of medical school entry places and the forecast number of medical graduates at a UK level.

In 2010/11 the UK funded 7,493 F1 posts, spread across the home nations as England (6,114), Northern Ireland (241), Scotland (806), and Wales (332). This is not expected to change for the 2012/13 year.

2.2.4 Summary

It is timely to review the current supply of the future medical workforce against future predicted demand. The Health Education National Strategic Exchange (HENSE) has approved a programme of work, agreed across the four devolved administrations, to review medical and dental undergraduate numbers this year and the CfWI is to be commissioned to carry out this work. This work will consider future demand and will take account of the impact of current policy on the future medical workforce, such as Transforming Community services (DH, 2009), Quality Innovation Productivity and Prevention work (NHS Improvement, 2011) and the Temple report (Temple, 2011) as well as the impact of skill mix, technological advances and service remodelling.

To inform this work we have started to consider horizon scanning and the impact on the workforce resulting from service changes. Our preliminary paper, *The future shape of the healthcare workforce*, will be available in August 2011 at www.cfwi.org.uk and we welcome contributions to this ongoing work.

2.3 Core training: workforce planning issues

In this report we make recommendations based on the medium-term workforce projections for each of the medical specialties. These recommendations involve changes to the recruitment numbers entering specialty training. For run-through specialties, (subject to training capacity, funding and service reconfiguration) these changes can be implemented immediately at the ST1 recruitment point. However, for uncoupled specialties (Surgery, Medicine, Psychiatry, Anaesthetics and Acute Care Common Stem) there is already a pipeline of doctors currently undergoing core training.

There are two potential risks when making changes to specialty training recruitment:

- Securing the pipeline:
  - A reduction in ST3/ST4 recruitment opportunities without a reduction in CT1 recruitment in previous years may create an oversupply of core graduates against higher specialty training posts.
  - An increase in ST3/ST4 recruitment opportunities without out an increase in CT1 recruitment in previous years may result in unfilled posts and projected estimated supply not being met.

- Failing to change the opportunities at core training level to match changes in specialty training (such as the shift to General Practice) may result in trainees choosing specialties where specialty training opportunities are less likely to exist. This does not support the trainees choosing the specialties where they will be most needed in the future.

2.3.1 Core Surgical Training example

The above issues are exemplified in Surgery. In surgical training in England there is currently almost twice the number of core surgical training (CST) posts compared with ST3 Surgery posts. Selection into ST3 Surgery is highly competitive, with most applicants applying from posts outside CST after gaining more surgical experience.

In 2011, only 31 per cent of the 1,757 applicants for the 426 ST3 surgical posts applied directly from core surgical training: 41 per cent of applicants from CST were appointed to ST3 posts compared with only 17 per cent of applicants from other posts.

Every year several hundred core surgical trainees complete their training without realistic opportunities to progress into higher specialty training. Over the next few years it is important that the number of CST posts is more closely aligned to the number of ST3 surgical posts available. This will avoid increasing the number of doctors unable to progress into higher specialty training in surgery.

2.3.2 Impact of CfWI recommendations

By 2014, with full implementation of the CfWI recommendations the average number of recycled NTNs available for recruitment into ST3 for the Surgical and Physician based training will be just over 1436; 410 in surgery and 1026 in physician based training. This is a reduction from the current number of around 492 in surgical based specialties and 1061 in physician based specialties.

The number of core training posts recruited to in 2009 (the latest available data) was 607 in CST and 1160 in CMT.

Without action, the gap between specialty training opportunities and core training in these areas will increase. This can result in:

- core trainees being displaced and unable to progress into specialty training
- trainees not choosing other specialty areas where a need has been identified, such as Emergency Medicine.

Therefore we recommend that changes to core training posts should be implemented in conjunction with the recommendations in this report. We do not however specify the level of changes to core recruitment in this report, since the actual level of change will be dependent

on the changes to local 'gearing' between the core and higher specialty training opportunities, some of which are already underway.

2.4 Smaller specialties: workforce planning issues

The General Medical Council (GMC) currently recognises 61 different medical specialities and many of these specialities are represented in the consultant workforce of every district general hospital. However, some are currently only found in tertiary centres, which may be because the speciality provides an essential service to a small number of patients or that the speciality is relatively new. These two situations present potential risks to the sustainability and growth of these specialities.

The risk of inappropriate education commissioning for small specialities has been identified by the Conference of Postgraduate Medical Deaneries (COPMED) Workforce Group as long ago as 2005. The issue was also identified in *A High Quality Workforce: NHS Next Stage Review* (DH, 2008b) which recommended planning of low volume specialities at the national level.

However, to date, neither a definition of small specialities nor a process of educational commissioning has been agreed. In the case of small specialties, there is the risk that local service commissioning, when considering the healthcare needs of the local population, may overlook or not consider incidences of cases which may affect only a handful (or less) of the population. Local education commissioning may then fail to consider the need to provide this workforce. This can then impact on the national planning for small specialties.

In the case of currently small but developing specialties, there is the risk that although local commissioning plans do acknowledge the role of this workforce, the level commissioning of this specialty is only set according to the local commissioning plans rather than providing a supply of specialists to take up positions outside the local geography; this is particularly important when quality training may only be possible in a few parts of the country.

The emerging workforce planning, education and training system, including HEE, is well placed to provide clarity and therefore improved planning for small but important specialties and new specialties that are still emerging.

We recommend that early attention is given to the governance of, and processes for, commissioning small specialties to avoid significant undersupply in the future.

2.5 Clinical academic: workforce planning issues

This is the first CfWI report to include the academic workforce. We have provided a fact sheet and a summary sheet that set out the current available information and data about this workforce (Annex A).

The policy imperatives are clear: the contribution from clinical academia supports the drive to improve patient outcomes and to improve innovation and productivity. *The Government response to the Future Forum report* (DH, 2011) supported the important role of clinical academia and their future role in supporting commissioning. There is also an increasing requirement for high-quality training.

This report highlights the lack of data on the Clinical Academic education workforce, and the lack of data on the academic workforce employed by NHS organisations.

We recommend that:

- When considering the medical workforce we must also consider the broader contribution that future CCT holders will make to research, innovation, education and training and service.

- Work continues to identify the full academic workforce, including those who contribute to education and training and those who contribute to research and are employed wholly by NHS trusts. This work should be carried out at a UK level.

- Regular reviews of the academic workforce will be needed to monitor and secure the future supply for research, education and training. We recommend that work is put in place to track academic trainees through their careers, from student to consultant, so we can see the full benefits of opportunities on offer to the future academic workforce. In the first instance we recommend this is carried out annually.

- Further work is needed to understand the contribution required across all specialties.

3 CFWI IMPROVEMENT PLAN

This section summarises the improvements made since last year, areas for improvement that we have identified with stakeholders this year, and our priority developments for next year.

3.1 Background

Following feedback from stakeholders and external experts in 2010, the CfWI embarked on an improvement programme. We identified the following specific areas for improvement:

- **stakeholder consultation** – increasing the breadth and depth of our stakeholder engagement
- **modelling** – improving our supply and demand models, reducing complexity and improving accuracy
- **data and assumptions** – improving the quality of data and assumptions made in modelling
- **knowledge** – building knowledge and understanding across the wide range of professions in health and social care.

We have made positive improvements across all areas. This work will be continued in our business plan for 2011/12, and we welcome suggestions for further improvement.

3.2 Performance against 2010 improvement plan

3.2.1 Stakeholder consultation

In the production of this report we have created and worked with a project reference group including clinical leaders, employers, the education sector, lay and professional representatives, trainees, regulators and unions. The membership of this group is listed in Annex 3.

Over the past year the CfWI has received positive feedback about the improvements made in our engagement and the strengthened relationships across the Medical Royal Colleges and specialty associations.

3.2.2 Modelling

The CfWI commissioned the University of Manchester (UoM) to review and advise us on how to improve demand modelling, following the publication of our first medical specialty training numbers recommendations in 2010. Their report (UoM, 2011) provided valuable advice on improving our modelling methodology, which we have started to implement. It has

also informed our priorities for this year's business plan, in particular the drive to improve demand-led modelling.

We have started the process of sharing the detail behind the modelling in a series of 'Black Box Reveals'.

We have also worked with partners on specific areas to inform model development. For example, the CfWI contracted Dr Patricia Oakley to provide a high-level view of horizon scanning as it applies to the medical workforce. We will be developing a formal CfWI approach to horizon scanning later this year.

3.2.3 Data and assumptions

We recognise that data is critical for successful workforce modelling. Work is ongoing to map and review the information currently available, and we have published a list of data sources on our website (http://www.cfwi.org.uk/intelligence/projects/recommended-data-sources-and-collections-1).

We have not implemented a specific data improvement programme, due to larger issues around the changing nature of the system. However, we have carried out work to secure data sets, particularly in social care, and we are producing a list of areas for improvement.

The Information Architecture project has been completed and is available on our website. Further work will be undertaken this year to consider how relationships and responsibilities for data can be secured as we move to a new education, training and planning system.

The assumptions made in our modelling have been improved. For example, the CfWI model includes a factor for participation rate. We are aware that this varies across the specialties, and rather than assuming the same participation and retirement rate across all specialties, this year's modelling has included specialty-specific trends. We plan to look at participation trends in more depth through a number of specialty 'deep dives', to gain a deeper understanding of the more challenging area of over-participation.

3.2.4 Knowledge

The CfWI recognises that improved understanding and knowledge of the whole medical workforce is critical. Meetings between the CfWI leadership team and the colleges have resulted in an improved understanding of the issues faced by the specialties, and set a clear foundation for future work.

In the next stage of this work, we will carry out deeper analysis with specialties and trusts. We plan to review at trust level and at specialty level, and (where possible) clinical fellows and the staff, specialty and associate specialist grade (SSASG) doctors.

3.3 Additional areas for improvement in 2011–12

The areas for improvement identified as a result of 2010 modelling include:

- **Modelling assumptions** – Improving our modelling assumptions is a constant and ongoing process. Specific areas for investigation include training places since the number filled varies between specialties. The CfWI will look into improving this area during the specialty 'deep dive' work planned for late 2011.

- **Improved demand modelling** – we will enhance our approach to demand modelling, with greater use of scenarios and systems thinking, and use horizon scanning to help identify the key factors and forces that need to be considered. These include better identification and interpretation of the evidence base on lifestyles and disease prevalence, technological developments, and consideration of different service models and skills mix.

- **Representing uncertainty** – we will develop an approach to represent the level of uncertainty in our forecasts, for example by specifying a confidence interval.

- **Modelling of delays –** each medical curriculum has a minimum training length, but trainees may take longer than the minimum, and for the purposes of modelling this has been described as a 'delay in training'. With the help of data supplied by the Royal Colleges, our model takes into account the average length of training. However, the model could be improved further understating the variability around this average.

3.4 Next steps to improve understanding of the medical workforce

1. In the coming months, the CfWI will continue to build on the work covered in this report and earlier this year on the future shape of the consultant workforce. We will work with employers and the professions to:

   - Carry out further, more detailed modelling across nine specialties listed in Annex 4 where they are identified for a deep dive in 2011 –these specialties have been identified for a variety of reasons, including a particular interest in modelling a consultant-delivered service, complex interplays between specialties that require a deeper understanding, interest in modelling the impact of service changes.

   - Carry out further modelling within hospital settings to explore the full benefits and risks of different approaches to the future consultant workforce.

   - Consider whether other scenarios should be modelled in the future to inform workforce planning for the medical workforce, to include participation rates.

   - Consider combinations of scenarios that are of interest to employers and the profession.

2. As the new planning system develops, the understanding of service need will improve and the longer-term planning should therefore also improve. Further work will take place with a selection of employers to understand their service plans and the impact on the whole workforce, including the medical workforce. The outcome of this work will be discussed with employers, SHAs and the new emerging local education and planning bodies, to improve understanding of the needs of employers across primary and community care settings.

3. Carry out a UK-wide approach to analyse undergraduate medical school numbers and alignment with future postgraduate training predictions.

4. Begin work to understanding career choices of doctors and other professional groups.

5. We will work with the system to identify appropriate data requirements and responsibilities and accountabilities for data quality.

6. Continue to develop horizon scanning capability and build on the pathway work to explore the impact across the whole workforce of developments in technology, new roles, and service redesign supporting the shift to a demand led modelling approach.

ANNEXES

Annex 1a

Medical specialty workforce fact sheets and summary sheets are available at www.cfwi.org.uk.

Annex 1b

Summary recommendations showing year of implementation

This table shows the year by which the recommendation should be implemented. After this, the recommendation should remain constant.

Specialty	Indicative number of NTNs recycled each year	Recommendations on recruitment at entry point based on the status quo of recycled NTNs	Indicative number of posts following implementation of recommendations			
			2011	2012	2013	2014
Anaesthetics Group						
Anaesthetics	370	Sustained reduction of 16 NTNs phased over three years, in addition to any ICM conversions.			354	
Emergency Medicine	180	Existing supply appropriate: assume no change needed at this time. Work is needed to address recruitment and retention of EM trainees as the priority.				
Intensive Care Medicine		Increase expected though not possible to quantify at this time. This increase will take place through conversion of some existing Anaesthetic posts to ICM (Data for this specialty is included in Anaesthetics)				
General Practice						
General Practice	2800	Increase of 450 entry level training posts, phased over the next 4 years. Meeting this increase will require action to address current career choices and to aligning core and specialty training opportunities.				3250
Ophthalmology Group						
Ophthalmology	61	Existing supply appropriate: assume no change needed over the next 3 years. To include this specialty alongside the deep dive into medical ophthalmology				

Specialty		Recommendations	2011	2012	2013	2014
Physicians Group						
Acute Internal Medicine/General (Internal) Medicine	52	Existing supply providing growth, effect of shift to primary care and impact of QIPP needs to quantified before making changes to training numbers				
Allergy	1.5	Increase by 2 NTNs within the next 2 years and then resume original recruitment of an average of 1.5 recycled NTNs per year.	3	3	1.5	
Audiological Medicine	3.5	Existing supply appropriate: assume no change needed over the next 3 years				
Cardiology	105	Existing supply appropriate: assume no change needed over the next 3 years				
Clinical Genetics	12	A one off reduction of 5 NTNs within the next 2 years and then resume original recruitment (i.e. then continue to recycle all NTNs after that)		7	12	
Clinical Neurophysiology	7	Existing supply appropriate: assume no change needed over the next 5 years				
Clinical Pharmacology and Therapeutics	8	Existing supply appropriate: assume no change needed over the next 3 years				
Dermatology	42	Sustained increase of 6 NTNs to be phased in over the next 2 years.		48		

Specialty		Recommendations	2011	2012	2013	2014
Physicians Group (Continued)						
Endocrinology and Diabetes Mellitus	66	Existing supply appropriate: assume no change needed over the next 5 years				
Gastroenterology	95	Sustained reduction of 6 NTNs phased in over the next 2 years		89		
Genitourinary Medicine	30	Existing supply appropriate: assume no change needed over the next 4 years				
Geriatric Medicine	118	Increase of 15 NTNs in each of the next 3 years and then resume original of an average of 118 NTNs recycled each year	123	123	123	118
Infectious diseases	19	Existing supply appropriate: assume no change needed over the next 3 years				
Medical Oncology	40	Existing supply appropriate: assume no change needed over the next 3 years				
Medical Ophthalmology	0.5	Existing supply appropriate: assume no change needed over the next 3 years				
Neurology	37	Existing supply appropriate: assume no change needed over the next 3 years				
Occupational Medicine	8	Existing supply appropriate: assume no change needed over the next 3 years				
Palliative Medicine	48	Existing supply appropriate: assume no change needed over the next 3 years				
Rehabilitation Medicine	13	Existing supply appropriate: assume no change needed over the next 3 years				

Specialty		Recommendations	2011	2012	2013	2014
Physicians Group (Continued)						
Renal Medicine	57	Sustained reduction of 25 NTNs phased in over 4 years				32
Respiratory medicine	124	Sustained reduction of 10 NTNs each year, phased over the next 2 years		114		
Rheumatology	50	Existing supply appropriate: assume no change needed over the next 5 years				
Sports & exercise medicine	5	Existing supply appropriate: assume no change needed over the next 3 years				
Obstetrics and Gynaecology Group						
Obstetrics and Gynaecology	200	Sustained reduction of 40 NTNs phased in overthe next 4 years				160
Community Sexual & Reproductive Health	2	Sustained increase of 5 NTNs phased in over next three years			7	
Paediatrics Group						
Paediatric cardiology	7	Existing supply appropriate: assume no change needed over the next 3 years				
Paediatrics	300	Existing supply appropriate: assume no change needed over the next 3 years				

Specialty		Recommendations	2011	2012	2013	2014
Pathology Group						
Chemical Pathology	11	Existing supply appropriate: assume no change needed over the next 3 years				
Haematology	68	Existing supply appropriate: assume no change needed over the next 3 years				
Histopathology	70	Existing supply appropriate: assume no change needed over the next 3 years				
Immunology	6	Existing supply appropriate: assume no change needed over the next 4 years				
Medical Microbiology and Virology	35	Existing supply appropriate: assume no change needed over the next 3 years				
Public health						
Public health	44	Existing supply appropriate: assume no change needed over the next 3 years				
Psychiatry Group						
Child and Adolescent Psychiatry	66	No change in training numbers, addressing recruitment and retention of trainees the priority				
Forensic Psychiatry	30	No change in training numbers, addressing recruitment and retention of trainees the priority				

Specialty		Recommendations	2011	2012	2013	2014
Psychiatry Group (Continued)						
General (adult) Psychiatry	177	No change in training numbers, addressing recruitment and retention of trainees the priority				
Medical Psychotherapy	12	No change in training numbers, addressing recruitment and retention of trainees the priority				
Psychiatry of Learning Disability	22	No change in training numbers, addressing recruitment and retention of trainees the priority				
Psychiatry of Old Age	68	No change in training numbers, addressing recruitment and retention of trainees the priority				
Radiology Group						
Clinical Oncology	88	Existing supply appropriate: assume no change needed over the next 3 years				
Clinical Radiology	173	Existing supply showing growth close to meeting current predicted demand. Further work is being carried out and until complete assume no change				
Interventional Radiology		Expansion required. Recommend an initial real increase of 5 NTNs each year. New posts should **not** come from existing Clinical Radiology posts. The new posts should come from converting posts from other specialties and based on local need and local prioritises.	**+5**			
Nuclear Medicine	5	Existing supply appropriate: assume no change needed over the next 3 years				

Specialty		Recommendations	2011	2012	2013	2014
Surgery Group						
Cardiothoracic Surgery	12	Recruit 23 people to existing training posts in 2012. Review annually to balance supply of the newly qualified and retirees. NB this recommendation is made by a national group that overseas this specialty	23			
General Surgery	158	Sustained reduction of 35 NTNs, phased in over the next 3 years			123	
Neurosurgery	17	Sustained reduction of 3 NTNs, phased in over the next 3 years			14	
Oral and Maxillofacial Surgery (OMFS)	22	Existing supply appropriate: assume no change needed over the next 3 years				
Otorhinolaryngology (ENT)	45	Sustained reduction of 12 NTNs, phased in over the next 3 years			33	
Paediatric Surgery	13	Reduction: Removal of 14 MMC transition NTNs created in 2007 and 2008. Only 10 of the 14 Hewitt and Johnson NTNs have been identified as allocated posts. The whereabouts of the remaining four will need to be established in order to remove the appropriate number of posts to total 14.	The CfWI recommends that training numbers are appropriately reduced as the 14 Hewitt & Johnson NTNs complete training and are withdrawn.			
Plastic Surgery	37	Existing supply appropriate: assume no change needed over the next 3 years				
Trauma and Orthopaedic Surgery	146	Sustained reduction of 30 NTNs, phased in over the next 3 years			116	
Urology	41	Existing supply appropriate: assume no change needed over the next 3 years				

Annex 1c

The table below sets out the proposed review year for each specialty following this year's recommendations. It indicates the date when progress against our recommendations should be assessed. We have also included our intention to carry out "deep dives" that go beyond an analysis of future training numbers to develop an improved understanding of the future shape of the medical workforce for each specialty. We plan to carry out a series of these in this year and next.

SPECIALTY	PROPOSED REVIEW DATES				
	2011 Including deep dive	2012 Including deep dive	2013	2014	2015
Anaesthetics	X		X		
Emergency Medicine	X		X		
General Practice	X		X		
Intensive Care Medicine	X		X		
Obstetrics and Gynaecology	X			X	
Otorhinolaryngology (ENT)	X			X	
Paediatric Surgery	X			X	
Psychiatry of Old Age	X			X	
Acute Internal Medicine/ General (Internal) Medicine		X		X	
Allergy				X	
Audiological Medicine			X		
Cardiology			X		
Cardiothoracic Surgery		X			
Chemical Pathology				X	
Child and Adolescent Psychiatry			X		
Clinical Genetics				X	
Clinical Neurophysiology					X
Clinical Oncology		X			
Clinical Pharmacology and Therapeutics			X		
Clinical Radiology		X			
Community Sexual &					X

SPECIALTY	PROPOSED REVIEW DATES				
	2011 Including deep dive	2012 Including deep dive	2013	2014	2015
Reproductive Health					
Dermatology			X		
Endocrinology and Diabetes Mellitus					X
Forensic Psychiatry		X			
Gastroenterology			X		
General (adult) Psychiatry	X			X	
General Surgery		X			
Genitourinary Medicine				X	
Geriatric Medicine		X		X	
Haematology			X		
Histopathology			X		
Immunology					X
Infectious Diseases					X
Medical Microbiology and Virology				X	
Medical Oncology				X	
Medical Ophthalmology		X			X
Medical Psychotherapy		X			
Neurology			X		
Neurosurgery				X	
Nuclear Medicine		X			
Occupational Medicine					X
Ophthalmology		X			
Oral and Maxillofacial Surgery (OMFS)				X	
Paediatric Cardiology		X		X	
Paediatrics	X			X	
Palliative Medicine				X	
Plastic Surgery				X	
Psychiatry of Learning Disability		X			
Public health				X	
Rehabilitation Medicine			X		
Renal Medicine				X	
Respiratory medicine				X	

SPECIALTY	PROPOSED REVIEW DATES				
	2011 Including deep dive	2012 Including deep dive	2013	2014	2015
Rheumatology					X
Sports & Exercise Medicine			X		
Trauma and Orthopaedic Surgery			X		
Urology		X		X	

Annex 2

Excerpt taken from *Department of Health, Health Profile of England 2009, prepared by Health Improvement Analytical Team – Monitoring Unit March 2010*

Summary of Indicators – National Trend (referenced in each fact sheet)

Adults' Health and Lifestyle	Period	Unit	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Adults who smoke	Cal**	%	nd	27	27	26	25	25	24	22	21	21
Drinking (exceeding sensible drinking) - adult males (o) (q)	Cal**	%	nd	28	27	27	nd	nd	24	31	nd	28
Drinking (exceeding sensible drinking) - adult females (o) (q)	Cal**	%	nd	17	15	17	nd	nd	13	20	nd	19
Binge drinking - adult males (o)	Cal**	%	nd	21	21	21	23	23	18	23	25	21
Binge drinking - adult females (q)	Cal**	%	nd	9	9	9	9	9	8	15	16	14
Healthy eating (5 a day) - adult males (l)	Cal	%	nd	nd	22	22	22	23	26	28	27	25

Healthy eating (5 a day) - adult females (l)	Cal	%	nd	nd	25	25	26	27	30	32	31	29
Physically active adults - males (l)	Cal	%	nd	nd	nd	nd	36	37	nd	40	nd	42
Physically active adults - females (l)	Cal	%	nd	nd	nd	nd	24	25	nd	28	nd	31
Obese adults - males (l)	Cal	%	18.7	21	21	22.1	22.2	22.7	22.1	23.7	23.6	24.1
Obese adults - females (l)	Cal	%	21.1	21.4	23.5	22.8	23	24.3	24.3	24.2	24.4	24.9

Notes

Period: Cal = Calendar year, Unit: % = percent of population, 'nd' indicates no detail available

(l) Weighting for non-response was introduced in the Health Survey for England in 2003. Un-weighted data from HSfE is shown to 2002; weighted data is shown from 2003.

(o) Method of calculating units of alcohol revised from 2006 to take account of changes in strength and the way some drinks are consumed. Old method shown to 2005 (shaded grey); new method (assuming an average wine glass size) from 2006. Data for 2008 are also available on the new method combined with data on wine glass size - see *General Lifestyle Survey 2008* results on National Statistics website for further details.

(q) Based on average weekly consumption data (more than 21/14 units per week for males/females).

Annex 3

APPROACH AND ENGAGEMENT

The approach to producing this report has involved extensive stakeholder engagement.

In developing this report a project reference group with professional, employer, trainee and lay representation had an oversight role (membership is listed at the end of this annex)

Engagement with specialty bodies
Our approach has involved sharing our modelling approach and transparency over the data sources we use.

We met with representatives from a number of colleges, faculties, specialist associations and societies, lead postgraduate deans, higher education and academic institutions, to identify the best data and information to use in the compilation of the fact sheets.

For each specialty we nominated an analyst responsible for regular engagement with relevant college/faculty representatives. In addition to this, we met with almost all of the presidents of the Royal Colleges, or their nominated deputy, to discuss the information contained in the fact sheets, to capture the concerns of the specialties and to discuss future working between the CfWI and the colleges and specialties.

In addition we held a 'Black Box Reveal' and invited presidents and their nominated deputies to attend a demonstration of the modelling approaches which we used during this work. This will be repeated later this year.

For information about future CfWI Black Box Reveal events, please contact enquiries@cfwi.org.uk.

Engagement with employers
The CfWI regional leads have met with medical directors across England to gain the employer perspective on different service models and the likely impact on workforce planning. This provided initial insight on the effect of the CfWI's medical training recommendations and a view of the future demand.

The employers' independent representative and accountable body, the NHS Employers organisation, has a widely based Medical Workforce Forum to establish the employer voice on workforce matters on behalf of its policy board. We have tested our plans, modelling approach and emerging ideas with the Medical Workforce Forum and received feedback on the employer perspective. We have noted the NHS Employers organisations' November

2008 Briefing Paper[2] *Medical training and careers – the employers' vision* (NHS Employers, 2008) setting out the employers' vision of future medical training and careers.

Wider stakeholder engagement
In parallel to the specialty stakeholder meetings, we have engaged with the higher education sector, academics, subject matter experts and key partner organisations including the Department of Health for England, the remaining three UK health departments, Medical Education England, and the Medical Programme Board (MPB), the National Institute for Health Research (NIHR), the NHS Employers organisation, postgraduate deans, professional advisory boards, Skills for Health, strategic health authorities, and Universities UK (UUK) to gain a broad perspective when considering the future medical workforce.

Process for fact sheet and summary sheet development

The process for the production of fact sheets and summary sheets was as follows:

- From the outset, the CfWI engaged with a wide range of people across the health sector to obtain their ideas and views, and help set the scope and direction for the approach.
- This was followed by extensive engagement with workforce representatives from the 61 medical specialties (grouped into 56 for reporting purposes) and including Royal Colleges, specialty associations and lead postgraduate deans and with the Medical Schools Council to inform the Academic Medicine fact and summary sheet. The purpose of these meetings was to consider the robustness of data sources and assumptions used in modelling, to capture the specialty views and concerns, and to collect key reports and evidence relevant to each specialty.
- The data was then fed into the models that we use and the output was included in the **fact sheets**. The fact sheets contain the policy context, evidence available, patient and service data, workforce information, geographical data and recruitment information.
- Follow up 'sense' check engagements were conducted, before completion of the fact sheets, to verify the draft findings. These were either face-to-face meetings or email correspondence.
- **Summary sheets** were then developed. The summary sheets contain **the recommendations** for medical training numbers in the coming years (timescale being dependent on the circumstances of the specialty) and by geography.

2 http://www.nhsemployers.org/Aboutus/Publications/Documents/Single%20equality%20schemes%20in%20the%20NHS.pdf

- those involved in co-producing the fact sheets also received the final fact sheet and summary sheet for final comment.

Membership of the Project Reference Group

The Project Reference Group met between April and May 2011 and subsequently communicated via email correspondence in the review of this report. Members of the group include:

- Mr Paul Buckley – Director of Education, GMC
- Dr Alison Carr – Senior Clinical Advisor, Medical Education and Training Programme, DH
- Professor Iain Cameron – Dean of Medicine, Southampton University
- Mr David Evans – Medical Director, Northumbria Healthcare NHS Foundation Trust
- Dr Jonathan Hafferty – Trainee under Chief Medical Officer Clinical Advisor Scheme
- Professor Amanda Howe – Honorary Secretary Royal College GPs
- Ms Sally Malin – MPB lay member
- Mr Bill McMillan – Head of Medical Pay and Workforce, NHS Employers
- Dr Peter Nightingale – President Royal College Anaesthetists
- Dr Mark Porter – Chairman of the BMA, Central Consultants and Specialists Committee
- Professor David Sowden – Chair, COPMED

The following members were unable to join the meetings of the Project Reference Group, but received papers for comment:

- Dr Toni Ardolino – Trauma and Orthopaedic surgery trainee
- Mr Gareth Goodier – Chief Executive, MEE and Cambridge University Hospitals FT
- Steven Powis – Medical Director, MEE and Royal Free
- Mr Miles Scott – CEO Bradford Teaching Hospital and Chair of FTN

Annex 4

DATA SOURCES

A range of data sources was used to populate the model, including the NHS IC census, iView Monthly Data, and statistics from the Office for National Statistics (ONS). These data sources have gone through validation and assurance processes and are widely recognised.

Some of the data sources used in phase 3 modelling are given in the following table.

Source of data	Data use
Office for National Statistics (ONS): population estimates and forecasts (2010)	Used to assess demographic drivers of growth in demand
Department of Health: weighted capitation (2010)	Used as a benchmark for the regional distribution of medical staff
IC Census from the NHS Information Centre for Health and Social Care (2010)	Gives the size of the current workforce and is the baseline for supply modelling. These numbers were further validated with Royal Colleges during visits.
IC deanery monitoring (2009)	Numbers of doctors in training to CCT validated with Colleges
Retirements and attrition – based on CfWI intelligence and discussions with the Royal Colleges (2011)	Used as input to supply modelling
Department of Health (DH) monitoring of recruitment to specialty training posts	An indication of the extent to which posts were filled in particular specialties and regions.
Hospital Episode Statistics (HES) data	Used for identifying the age bands in the population that use services by specialty.

Although the quality of data in the NHS has improved greatly in recent years, there are still variations in reported numbers between some data collections. This may be due to errors in collection and coding, or data being updated at different times. Our approach recognises that all data will have errors and inaccuracies. To reduce these variations, aggregated data

collections were used, such as those listed. The CfWI recognises the limitations of the data sets available to us.

To mitigate data inaccuracies, we checked data sources with data collected by the specialties. This additional intelligence contributed to the specific modelling and analysis of each individual specialty. Where discrepancies are identified, the intention is to report this to the data owners so that they can be resolved.

Data triaging

The CfWI analysts worked with the Royal Colleges and/or specialty association workforce leads to analyse the most recent data and establish the most robust numbers used to model their workforce. If NHS IC data was considered less robust than the data provided by the specialty (census, or otherwise), was used instead. In some cases multiple sets of data were modelled to investigate the sensitivity of different data sets and decide the approach to be taken.

Annex 5

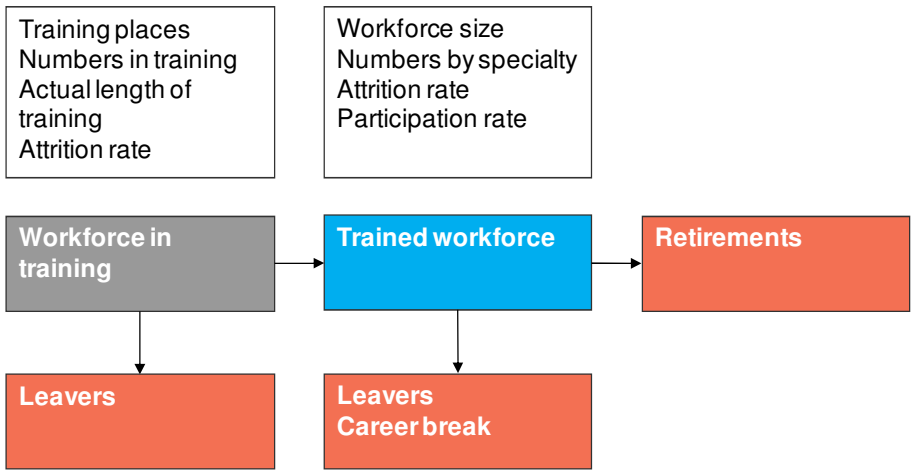
MODELLING METHODOLOGY

Building on the models we used earlier in the year to look at the future shape of the consultant workforce, a stock and flow modelling approach was used to forecast medical workforce numbers to 2020. This approach is commonly used to understand the dynamics of systems where a physical entity (a stock) flows through a series of stages. In this case it is medical trainees flowing through the training process.

The number of trainees flowing from one stage to another depends on the starting numbers, those who arrive or leave, for example due to retirements or attrition and changes in participation.

Figure 1 depicts the inflows and outflows modelled to forecast supply for the trained workforce. Assumptions used in the model are listed in the white boxes.

Figure 1: Entry and exits to the trained workforce



CfWI modelling assumes no additional immigration of doctors either into the trained or training grades. This is because it is assumed the service will only recruit additional workforce when there is an undersupply of home-trained doctors.

Modelling hospital specialty training

The supply model was developed using Microsoft Excel with VBA macros. Excel provides a level of accessibility that a commercial modelling package typically does not provide. Stochastic simulation modelling (which uses probability theory to explore uncertainty around assumptions and scenarios) was not used because of concerns over the acceptability

of the approach and presentation of the results. Internal testing and external review of the modelling approach has been undertaken to improve model robustness and accuracy.

In recent years, most medical workforce planning has been supply led. We recognise the limitations of this approach. Workforce planning should begin with an assessment of workforce demand; driven by factors such as demographics, lifestyles, disease prevalence, changes in technology and the practice of medicine (including service delivery models).

In the absence of robust demand-side data, we have modelled the specialty requirement against the supply forecast. We are planning to develop more effective demand-side modelling later this year. A recent review for the World Health Organisation found that no country has linked supply and demand side modelling in a manner that can be described as best practice (Dussault, et al., 2010).

The CfWI is exploring a range of options to improve demand side modelling. For instance, a very simple model is to estimate future demand by taking the current number of constants and increasing it at the rate of population of growth of their key patient group. This has the implicit assumption that the current workforce is of the correct size. We are also working with a number of European partners to share best practice in this field.

Modelling General Practice

The General Practice workforce has been modelled separately as the above model does not consider GP registrars in speciality training in primary care. The model to forecast the GP workforce was developed by the CfWI using the statistical package R, a language and environment for statistical computing and graphics. The benefit of this methodology is that it allows for both the supply and the cost of the secondary care medical workforce to be modelled.

Data used to populate this model includes the annual Information Centre GP census, GP recruitment level data, and unpublished information from the NHS Information Centre on retirements and rejoiners. More detailed information can be found in the GP fact sheet (see Annex 1a).

Annex 6

GEOGRAPHICAL DIMENSION AND WEIGHTED CAPITATION

Where we have identified that specialty training numbers for a particular specialty should be reduced or increased, we also make recommendations on where those reductions or increases should fall. For this report the key measure used is weighted capitation. Weighted capitation is a commonly used methodology within the NHS for the allocation of resources. The CfWI recognises other factors are important and contribute to the future workforce needs and current need for trainees, for example:

- the quality of training places
- trends in mobility of trainees
- varying service delivery models
- vacancy rates for consultants
- activity by specialty.

How do we use weighted capitation?

Weighted capitation is a measure of health need for a region based on the population, including its age structure, levels of existing illness and other factors. We identify those regions where the medical workforce is above or below the number that would be expected in relation to weighted capitation for the region. For each SHA and particular specialty, the existing workforce for consultants and doctors in training to CCT is compared against a theoretical workforce distributed according to weighted capitation. The possible patterns for the weighted capitation analysis are summarised in Table 2.

In addition to weighted capitation, geographical inequalities were assessed using intelligence gathered during engagement with specialty representatives.

There are other considerations to inform decision making and these include:

- tendency for doctors to stay and work in the area where they trained (over 86 per cent)
- essential training that can only be provided in specific training institutions
- future allocation of trainees should be influenced by where the highest quality training takes place (given a robust evidence base for quality)
- local needs, at the level of towns or trusts, will not be captured in our analysis.

Table 1: Weighted capitation analysis

		Doctors in training to CCT	
		Under-capitated	**Over-capitated**
Consultants	**Under-capitated** [fewer doctors than expected based on weighted capitation]	A. SHA unable to grow existing workforce without additional places.	B. SHA appears to be in the position that consultant workforce will grow.
	Over-capitated [more doctors than expected based on weighted capitation]	C. The existing consultant workforce appears unlikely to be maintained.	D. The existing situation of over-capitation likely to be maintained unless posts are removed.

Where a national reduction in training numbers for a given specialty is recommended, deaneries within SHAs in box D should be prioritised for a reduction. Similarly, where we recommend an increase in training numbers, then those deaneries within SHAs in box A should be prioritised for an increase; so we not only grow the specialty, but also address geographical inequality.

Where there are large geographical differences in the distribution of consultant or trainee posts compared to weighted capitulation, then we have made recommendations to review geographical allocation. However, understanding the complexity of shifting posts around, we do not make recommendations for the relocation of training posts unless we increase or decrease the total number of posts. We also highlight where it would not be appropriate to reduce trainees in regions, due to geographical allocation and recruitment issues, where available.

We recognise the need for a more widely accepted mechanism for the geographical allocation of trainees, and that any changes to geographical allocation must be carried out as part of a planned transition that takes account of service delivery.

In the future we hope to work with the new emerging education and training system to develop a more widely accepted methodology for trainee allocation.

Annex 7

NAVIGATING AND UNDERSTANDING TERMS USED IN SUMMARY SHEETS

The following description should help the reader navigate and understand the summary sheets.

- **Section 1**: The recommendations box summarises:
  - changes in training numbers
  - the rate of change
  - over what time period (years)
  - geographical distribution issues to be addressed
  - future date for review.
- **Section 2**: Contains the **Introduction**, which outlines policies or issues which would affect workforce recommendations for the specialty. In this section a summary statement of the activity and/or participation rates may also be discussed.
- **Section 3**: The **Key findings** section is where the supply forecast (FTE) and requirement levels are detailed and analysed. The Royal College and/or specialty association concerns and views are also highlighted in a text box for ease.

  A graph is used in this section to highlight future supply. The following sources and definitions relate to the different elements of the graph:

- **Consultants (FTE) historical**: These figures are historical consultant FTE numbers, which are sourced from the NHS Information Centre for Health and Social Care (IC) census.
- **Specialty doctors in training**: These figures are historical figures that represent the aggregate headcount total of doctors counted by the IC as Registrar Group and SHO. This will include trust doctors (when they are paid on a training grade) as well as doctors in training. This information is sourced from the Information Centre census and only headcount data is available for trainees. [NB the CfWI modelling for future supply takes account of participation rates of trainees].
- **Staff, Specialty and Associate Specialty (SSASG) Doctors:** These figures are historical figures that represent the aggregate total of Associate Specialist, Specialty Doctor and Staff Grade workforce numbers (FTE).

The information listed above is sourced from the IC census. This analysis allows us to assess any trends in workforce supply in the past and assess the level of forecast workforce supply. The expected annual increase or decrease in supply is expressed as a percentage of the current workforce (4.8 per cent for general surgery). This is calculated as the change in FTE between 2010 and 2020, split over the 10 years, expressed as a percentage of the 2010 FTE value. To illustrate this, a workforce of 100 FTE, with a 5 per cent increase, would expect to grow by 5 FTE per year to 2020.

- **Consultant (FTE) CfWI forecast:** These numbers are based on CfWI supply modelling. This shows the forecast number of consultants that the CfWI predicts in the specialty in the future. These numbers are forecast by considering the current number of consultants in a specialty and estimating the number that will enter or exit the workforce throughout any given year, by using a series of inputs, including

    - assumed re-joiners
    - conversion of Associate Specialist (AS) and Staff Grade to CCT holders
    - creation of new posts
    - variation in length of training due to less than full time training
    - wastage rates
    - number of national training numbers (NTN) and vocational training number (VTN) S1[3]
    - other UK and international recruits
    - GMC successful CESR[4] and CEGPR[5] applications
    - recycling from wastage and promotions
    - retirements
    - returners
    - young leavers.

These inputs will typically be created from historical data, expert assumptions from professional bodies, or calculations.

Participation rates (defined as the ratio of FTE to headcount) of the current and future workforce are very important. The CfWI has included this factor in the modelling. Further work will be done on participation rates, including over-participation, in 2012.

- **Royal College estimation of the number of consultant posts the service will aim to fill with forecast based on population growth**. This series shows the forecast number of consultants the professional body believes will be required to deliver an effective service. The point at which the supply line crosses with this line

3 VTN S1 are current NTN holders on current specialist registrar or GP curricular who are not EEA)

4 Certificate of eligibility for specialist register

5 Certificate of eligibility for the GP register

shows us approximately how many years ahead/behind the supply is in meeting this prediction. It is important to note that in some cases this is the professional body's recommendation for 2012, after which the predictions become less accurate.

This analysis provides an insight into whether the specialty is in, or heading towards oversupply or undersupply against both population-based requirement and the forecast predictions of professional bodies, and therefore informs our recommendations.

- **Estimation of future number of consultant posts due to population growth** is the estimation of future number of posts due to population growth, produced using information from the Office for National Statistics (Mid-year population estimates 1971 to 2008, and 2008-based population projections 2009 to 2033, by single year of age and sex) on growth rates by age segment. The relevant age segment is chosen by careful analysis of the age group that each specialty targets. The requirement is then calculated by taking the current number of consultants in the specialty and increasing their number by the growth rate of the age segment year on year.

  If applicable to the recommendation and specialty a discussion of weighted capitation is included as well distributional geographical recommendations.

- **Section 4**: **The recommendation** section concludes the summary sheets with a discussion of the analysis which led the CfWI to its recommendations, and a brief discussion of risks to be considered if the recommendations are implemented.

Annex 8

GENETIC PATHOLOGY

As part of the CfWI engagement with the Royal College of Pathology, the Genetic Pathology specialty was identified. The CfWI acknowledges that the GMC does not have an approved curriculum for Genetic Pathology and therefore training into this specialty is not possible. The CfWI have not produced a fact sheet or summary sheet for this specialty, however this section briefly identifies the role of this specialty to ensure it service contribution is recognised and maintained.

Genetic Pathology is considered as one specialty within the medical workforce, whereas in the non-medical workforce it is split into two disciplines, Molecular and Cytogenetics. These two disciplines will be merging into one specialty, to be known as Laboratory Genetics.

During engagement meetings, between November 2010 and April 2011 the specialty provided the following information with regards to the genetic pathology workforce:

- There are five medically qualified consultants in Genetic Pathology in the UK. One NHS consultant in Genetic Pathology, Four Academia/Research (Hon. NHS Contracts):- Three Professors and one Senior Clinical Research Fellow.
- By 2020, the specialty predicts that three of these consultants are expected to retire.
- There is only one medically qualified dual Molecular Genetics and Cytogenetics consultant in full-time NHS employment in the UK.
- There are 23 regional Genetics centres in the UK, run by clinical scientists without medical input.

It should be noted that there would be a need for pathologists trained in genetics and molecular methods to contribute to test development, interpretation and contribution to multi disciplinary teams etc. Patient pathways were at risk in the absence of a cadre of molecular specialists. The growth area in cancer diagnostic and predictive testing was potentially of great importance. Also there is expected to be a sudden increase in tests which would create a major demand for those medically qualified to interpret the results and for clinical scientists to process the tests. It was reported that there was a steady trickle of high quality candidates that were interested in the Genetic Pathology and were willing to do the necessary extra training to obtain a consultant post. However, the UK had decommissioned Genetic Pathology as a training specialty and only the USA and Australasia commissioned it.

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