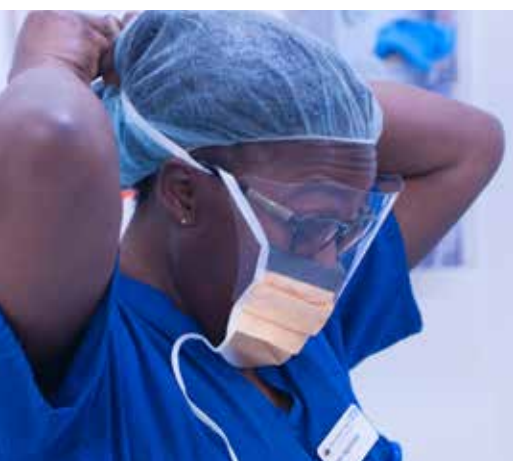


Cancer Workforce Plan

Phase 1: Delivering the cancer strategy to 2021



The NHS belongs to the people.

It is there to improve our health and wellbeing, supporting us to keep mentally and physically well, to get better when we are ill and, when we cannot fully recover, to stay as well as we can to the end of our lives. It works at the limits of science – bringing the highest levels of human knowledge and skill to save lives and improve health. It touches our lives at times of basic human need, when care and compassion are what matter most.

The NHS is founded on a common set of principles and values that bind together the communities and people it serves – patients and public – and the staff who work for it.

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Foreword

This is a time of unprecedented advances in our ability to prevent, diagnose and treat cancer, and it is our responsibility to embed proven new treatments and tests in routine healthcare as quickly and equitably as possible. To this end, we have established Cancer Alliances across the country, bringing together clinical leaders and teams to transform diagnosis and treatment in their local areas. We are investing £130m in technology and equipment to ensure all patients have access to the latest radiotherapy and £200m to accelerate the rapid diagnosis and assessment of patients and to enhance their quality of life.

However, patients will not reap the benefits of these new developments unless we have sufficient staff with the right skills and support to deliver them. For example, it is fantastic that we are about to roll out a new screening test for bowel cancer that will allow us to detect and treat this disease at an earlier stage, but it will require the time and expertise of histopathologists to diagnose the anticipated increase in samples; endoscopists and radiologists to carry out further investigations where necessary and oncologists, surgeons and nurses to provide care and treatment for people who receive a diagnosis of cancer. A workforce plan is, in effect, the delivery plan for the NHS.

This first phase report focusses on the actions needed to ensure we have enough staff with the right skills to deliver the funded activity set out in the Cancer Taskforce Strategy by 2021. This is not just about increasing numbers, but supporting our staff to develop new skills and enabling them to work differently. In addition to the steps we've already taken to increase the number of clinical radiologists and create new roles such as clinical endoscopists, this report sets out a number of 'pragmatic steps' to increase net supply and support new ways of working in the key professions highlighted in the Cancer Taskforce report. Whilst there is no new money over and above what was set out in the Spending Review of 2016, Health Education England (HEE) has reprioritised its budget and internal resources to support delivery of the Cancer Taskforce recommendations and Cancer Alliances are investing some of their transformation funds in their local workforce to deliver improvements for patients.

Whilst HEE is ultimately responsible for developing the Cancer Workforce Plan for England, it does not hold all of the levers. Success will require the Department of Health to continue efforts to ensure that contracts, pay and pension arrangements enable the NHS to become 'the employer of choice', so that employers can offer more flexible and rewarding jobs, and for Royal Colleges and regulators to work with us to identify and remove the barriers to more flexible training and careers.

If workforce remains an afterthought once the key policy and funding decisions have been made, or if 'demand' continues to be determined by affordability rather than forecast activity, then the gap between what is technologically possible, what is on offer to all patients and what is a sustainable workload can only grow. HEE will therefore publish a longer-term workforce strategy beyond 2021 in the summer, taking forecast activity and the needs of future patients as its starting point. We will work with Cancer Alliances and other partners to identify the workforce impact of future service models and the actions and investment required to secure the benefits of innovation for all.



Cally Palmer

Cally Palmer was appointed as National Cancer Director for England in October 2015. She is responsible for leading the implementation of the Independent Cancer Taskforce Strategy for improving cancer care in England. Cally is also Chief Executive of The Royal Marsden NHS Foundation Trust, a Trustee of the Institute of Cancer Research and a Trustee of The Royal Marsden Cancer Charity. She has an MSc in management with distinction from the London Business School and was awarded a CBE in 2006 for her contribution to the NHS.

Cally Palmer

Cally Palmer
National Cancer Director, NHS England



Ian Cumming

Ian started his career in the NHS as a Biomedical Scientist and later worked as a Research Scientist in coagulation disorders in Manchester, England before moving into general management in the late 1980s.

Ian has held a variety of NHS general management posts including Operating Theatre Manager at a large teaching hospital and Assistant Chief Executive to the former North West Regional Health Authority. More recently, Ian has spent 11 years as Chief Executive of acute hospital Trusts, and three years as the Chief Executive of a healthcare commissioning organisation prior to being appointed Chief Executive of the NHS in the West Midlands in 2009. In this role, as one of the 10 top leaders in the NHS, Ian also became a member of the national NHS Management Board.

In 2012, Ian was appointed Chief Executive of Health Education England (HEE). HEE has an annual budget of £5bn which it spends on the education, training and development of the current and future health and healthcare workforce in England including commissioning undergraduate and postgraduate education, workforce planning, and lifelong learning. HEE's role is to transform the delivery of healthcare by focussing on the workforce. Ian was one of the co-authors of the 2015 NHS Five Year Forward View which provides a strategic framework for continuing to improve the quality of care and efficiency of the NHS over the period to 2020. Alongside this, HEE has recently published its own 15 year vision for the needs of patients and how the workforce needs to change to meet these needs.

Ian Cumming

Professor Ian Cumming OBE
Chief Executive, Health Education England

Executive summary

The prevalence of cancer is forecast to increase, and scientific and technological innovations offer the potential to transform our ability to prevent, diagnose, treat and care for people affected. We know that some key parts of the workforce are under pressure now and unless we take action then we may not have enough staff with the right skills to deliver the Cancer Taskforce Strategy. This is a pragmatic plan to increase the net supply of numbers and skills in the short term whilst we develop a longer-term approach alongside our wider workforce strategy to be published in summer 2018.

Immediate/ongoing actions to make better use of existing supply

- HEE was already planning to invest in an additional 746 Consultants working in cancer by 2021. We have identified system wide actions such as improved retention to secure a further 535, producing a total of 1281 FTE more consultants working in cancer by 2021 (an estimated 21% increase from 2016), including 668 FTE more clinical radiologists, 316 more gastroenterologists, 243 FTE more oncologists and 94 FTE additional histopathologists (which would otherwise have declined by 40).
- HEE was already planning to invest in 1,890 more diagnostic and therapeutic radiographers by 2021. We have identified system wide actions to secure a further 955, producing a total of 2227 FTE more diagnostic radiographers and 1,560 FTE more therapeutic radiographers, a total of 2,845 FTE radiographers by 2021 (18% increase from 2016).
- We will support the expansion of Cancer Nurse Specialists so that every patient has access to a CNS or other support worker by 2021 by developing national competencies and a clear route into training, with a more detailed report on nursing and cancer in the light of new census data in spring 2018.

Expansion of skills over 1-3 years to support growth and transformation

- HEE will invest in 200 additional clinical endoscopists to support an increase in capacity for earlier diagnosis by 2021 (in addition to the 200 currently committed, a 100% increase)
- HEE will invest in 300 reporting radiographers by 2021 to support an increase in the capacity for earlier diagnosis as part of a national programme to assure quality and consistency
- HEE will establish a working group with the Royal College of Pathologists to explore ways of expanding reporting pathologists to increase diagnostic and dissecting capacity; invest in new clinical scientists training in cancer genomics to support the development of Consultant Clinical Scientists, and medical physicists to deliver novel forms of imaging and radiotherapy
- HEE will support the continued development of skills through **a national dedicated Skills Fund** to support the development and roll out of national transformational projects

Increase in net numbers of trainees over 3-15 years to support growth and transformation

- HEE will ensure we have the right numbers and skills for the future through investing in Post Graduate training places. With support from employers, Royal Colleges and other partners, we will improve recruitment to and reduce attrition from courses, increasing the numbers who go on to work in the NHS, to secure up to 134 FTE additional consultants by 2021, including a 10% increase in the number of oncologists.

HEE will work with partners in a national **Cancer Staff Forum** to make working and remaining in the NHS more attractive. Locally, HEE will work with **Cancer Alliances to develop workforce plans**, recognising the significant regional variations and the need for local conversations and solutions. Nationally, HEE will develop a **long-term workforce strategy** beyond 2021, built upon the forecast needs of future patients, emerging service models and innovations.

1. Purpose of this report

Following the publication of the *Five Year Forward View*, the Independent Cancer Taskforce set out a clear and compelling strategy to radically improve the prevention, diagnosis, survival and experience of people affected by cancer in England. It is the people working in our NHS – the GPs, nurses, oncologists, radiographers and radiologists to name but a few – who will deliver these improvements. This first phase plan will help improve in cancer services by 2021.

Delivering the cancer strategy will require not just an expansion in numbers but an ongoing investment in our staff, with focussed managerial action to retain the people we have, investing in their skills and supporting them to work differently and use their expertise where it is needed most. No single organisation or body holds all of the levers to deliver an increase in capacity and skills and an improved working environment. Success will require collaboration on a global, national and local level, and for us all to look beyond our organisational and professional boundaries, putting people – patients and staff – first. Whilst this report is primarily aimed at Cancer Alliances and the local offices of HEE, the active engagement of employers will be critical.

We know that the incidence and prevalence of cancer is forecast to increase and that technological innovations offer the potential to transform the models of care for people affected by cancer. But regardless of what the future brings, we know that some key parts of the workforce are under pressure and our new analysis suggests that unless we act now, we will not have enough staff to deliver the funded commitments. This plan is necessarily based upon the NHSE activity assumptions of 7% growth (which are based upon the funding received to deliver the *Five Year Forward View*) and sets out a series of 'no regret' moves we will take as a system to ensure we have the workforce we need to deliver funded commitments by 2021. Building on analysis and conversations with Royal Colleges, local Cancer Alliances, Arms-Length Bodies, charities and other partners, it sets out:

- **Where we are now:** the overall numbers of our current workforce (as traditionally defined and counted) in cancer services.
- **Where we will be if we take no further action:** our new 'waterfall' methodology looks back at recent history and planned growth rolling it forward to 2021, so that we can see the 'do nothing' position is likely to result in insufficient staff
- **What we will do to increase net supply (numbers and skills by 2021):** who needs to do what to increase the number of joiners, reduce the numbers of leavers and expand skills and develop new roles so that we deliver the funded activity in the Cancer Taskforce
- **How we will ensure delivery of our ambitions:** the implementation and governance arrangements to deliver the *funded* activity by 2021
- **What we will do next:** our plans for the second phase, to develop a workforce strategy based upon *forecast* activity beyond 2021

2. Planning for a disruptive future

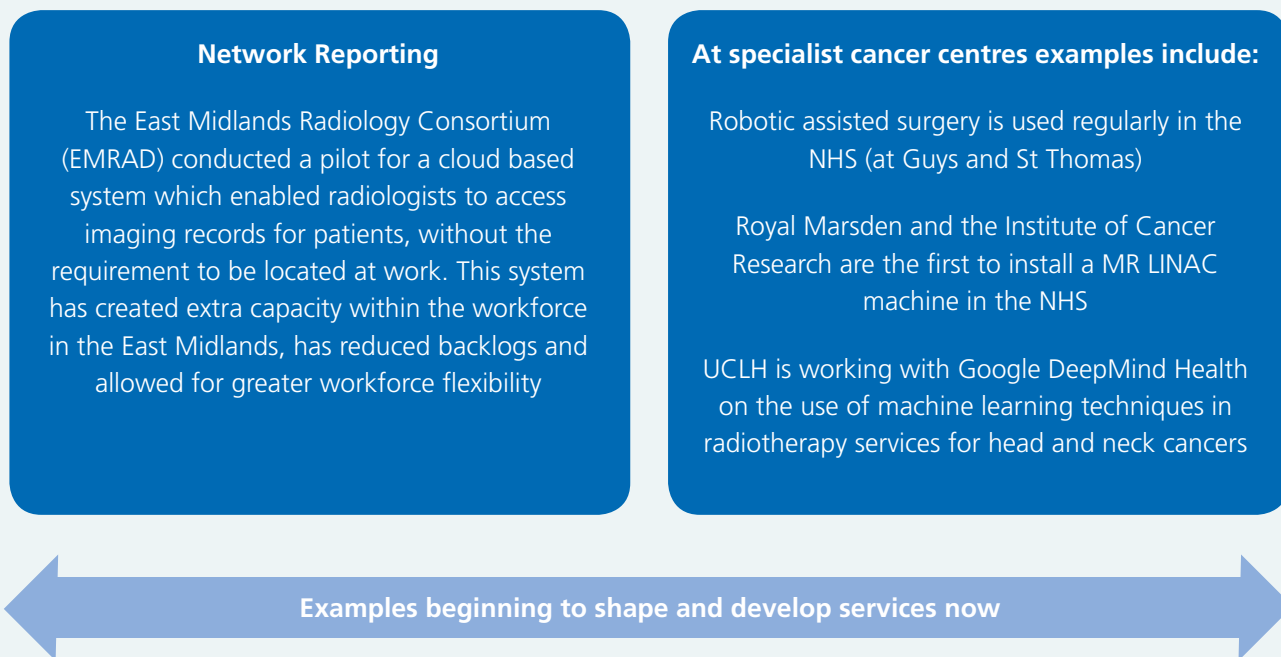
Predicting the number and shape of the future NHS workforce is always difficult but this is especially true for cancer, where the needs of patients and our ability to respond is subject to radical change.

Figure 1: Innovation and advancements in technology will disrupt service models and change the workforce requirements

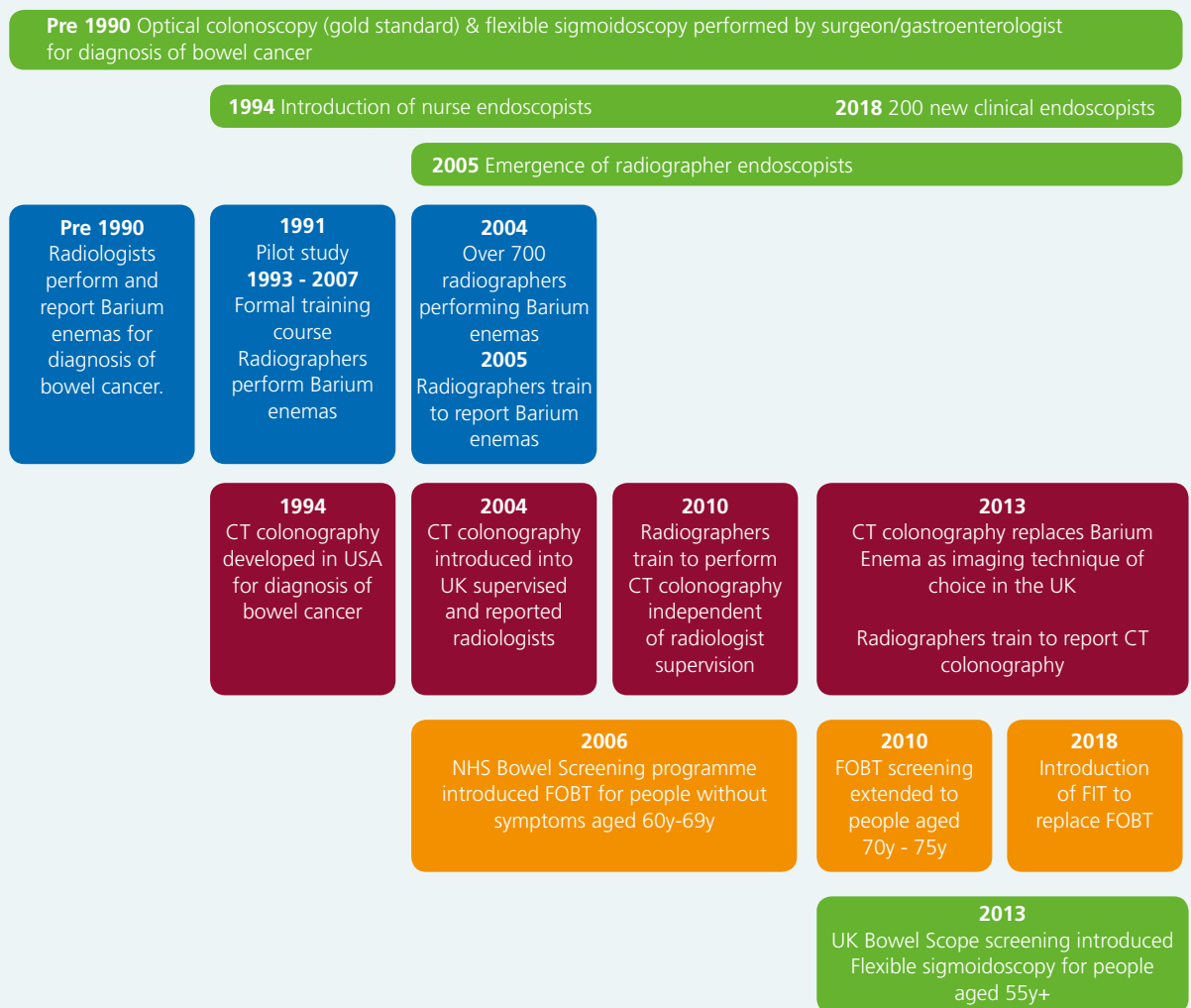


These forecast changes will require a radical transformation in the way in which we think about, prevent, diagnose, treat and care for people affected and many of them are happening already.

Figure 2: Innovation and advancements in technology will disrupt service models and change the workforce requirements



It is easy to get fixated on how the future will be different, but the history of medicine in general and cancer in particular is one of disruptive change. Innovative medical/non-medical skill mix initiatives are constantly developing to support the roll out of different screening and diagnostic tests, with radiologists and radiographers and gastroenterologists and nurse endoscopists increasingly working in integrated multi-professional teams to deliver the required increase in capacity and competences.



It takes 12-14 years to educate and train a consultant, during which time, the needs of people affected by cancer and our ability to prevent, diagnose, treat and care for them will change radically. As the forthcoming report from Cancer Research UK makes clear, can make it difficult to plan the workforce. (*Full Team Ahead: understanding the UK non-surgical workforce*). Some predict that Artificial Intelligence and digitisation will transform the delivery of care, allowing for greater automation; others that genomics and the personalisation of medicine will require more, not less, skilled professionals working at the top of their skill set as members of multi-disciplinary teams and networks of expertise. Some point to the fact that some cancers are becoming chronic conditions which will require more generalist staff, others that developments

in genomics will lead to greater specialisation. Add to this an increasingly global market for health workers, the impact of Brexit and the changing expectations of staff as well as patients, then the future levels of demand and supply become almost impossible to predict.

But in almost any scenario about the future, there is an emerging consensus that the need for cancer services (and therefore the workforce) is likely to grow, because:

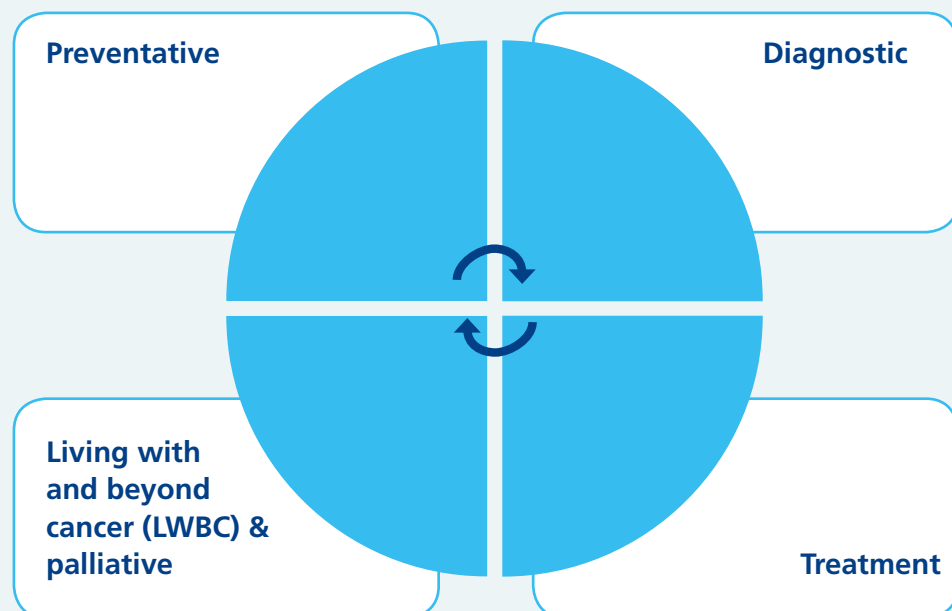
- *The incidence of cancer is forecast to increase.* Around 357,000 people in the UK were diagnosed with cancer in 2014 and in the year 2022, it has been projected that there will be around 422,000 new cases.. This represents a total increase of 18% in the annual number of new diagnoses over 8 years.
- *The NHS is committed to increasing the number of people diagnosed at an early stage* and this is likely to continue. *More than half of people diagnosed with cancer will now survive* their cancer for at least 10 years, meaning more people will recover, whilst for others cancer could increasingly be a chronic rather than acute condition, requiring ongoing support from the wider workforce.
- *Many of these patients will be older* and more likely to have other health problems which may make their treatment more complex.
- *Care is likely to become both more automated and personalised*, as innovations in genomics, immunotherapy, molecular diagnostics and personalised medicine offer the potential for a much more individualised approach to prevention, diagnosis, treatment and care.

HEE will work with partners to carry out more detailed work on the forecast levels of need and how innovations in digital medicine and robotics for example will enable us to respond in our phase two report, beginning with a call for evidence (**see page 49**). Meanwhile, against a general forecast of overall growth in activity and in response to the funded activity set out in the Cancer Taskforce report, this report sets out actions we can take in areas where we know we have workforce pressures that are likely to continue up to 2021. In order to avoid locking ourselves into outdated models of delivery, any significant investments in the long-term growth of particular professions will be considered as part of our longer-term strategy in the summer, where we will consider the impact of technological and scientific innovation. Any investments should enable an increasingly flexible and agile workforce to support new models as they emerge.

Section 5 considers where we are now in the seven key professions highlighted in the Cancer Taskforce report and looks at where we might be in 2021 if we took no further action as a system, but allowed recent history to repeat itself. We then set out the actions different parties will need to take across the system to secure a net increase in the numbers and skills of staff, so together we can deliver the funded improvements set out in the Cancer Taskforce report and Five Year Forward View.

3. Our existing workforce – where are we now

Whilst oncologists and chemotherapy nurses work exclusively in cancer, many of the professions who support patients on their cancer journey are involved in a whole range of different conditions. Historically, we have only paid attention to those professions who are most active in cancer services, such as radiologists, oncologists, radiographers and histopathologists. The limitations with this traditional approach are three-fold: it only provides us with a partial understanding of the workforce through the professional lens rather than the patients' eyes, thereby neglecting the wider workforce across the pathway of care; it does not help us understand how much capacity exists for diagnostic cancer services because this workforce is often shared with other services, nor does it tell us whether that capacity is in the right place to meet demand. More importantly, this approach risks locking us into current models of service delivery, focussing on individual professions rather than how we might prevent, diagnose and treat cancer patients better and faster. We are currently discussing with partners how we might design out these limitations and our initial thinking (which we welcome views on) is that a pathway-based approach might be more useful (recognising that many professions span more than one part of the cancer journey).



As well as being 'shared' the cancer workforce relies heavily on the support of their medical, clinical and administrative colleagues. Shortages in the number of GPs, for example, may affect the referral rate for diagnostic tests. Without sufficient paediatricians, opportunities to prevent, diagnose and provide after care for children and teenagers with cancer may be missed and without sufficient investment in administrative support and digital connectivity across primary, secondary and tertiary care, the productivity of pathologists and clinical radiologists, for example will inevitably be reduced. Without sufficient support from clinical endoscopists, gastroenterologists cannot increase their diagnostic capacity and unless we have enough chemotherapy nurses and surgeons, then our ability to promptly treat newly-diagnosed patients will be compromised. And when treatment is no longer an option, unless we have invested sufficiently in community based nurses and the palliative care team, then patients and their families will not get the care and support they deserve. It is not possible to focus on every profession in this report, but we recognise and value the team nature of health care, which will increase as Physician Associates, Advanced Clinical Practitioners and other more flexible roles are rolled out across the service.

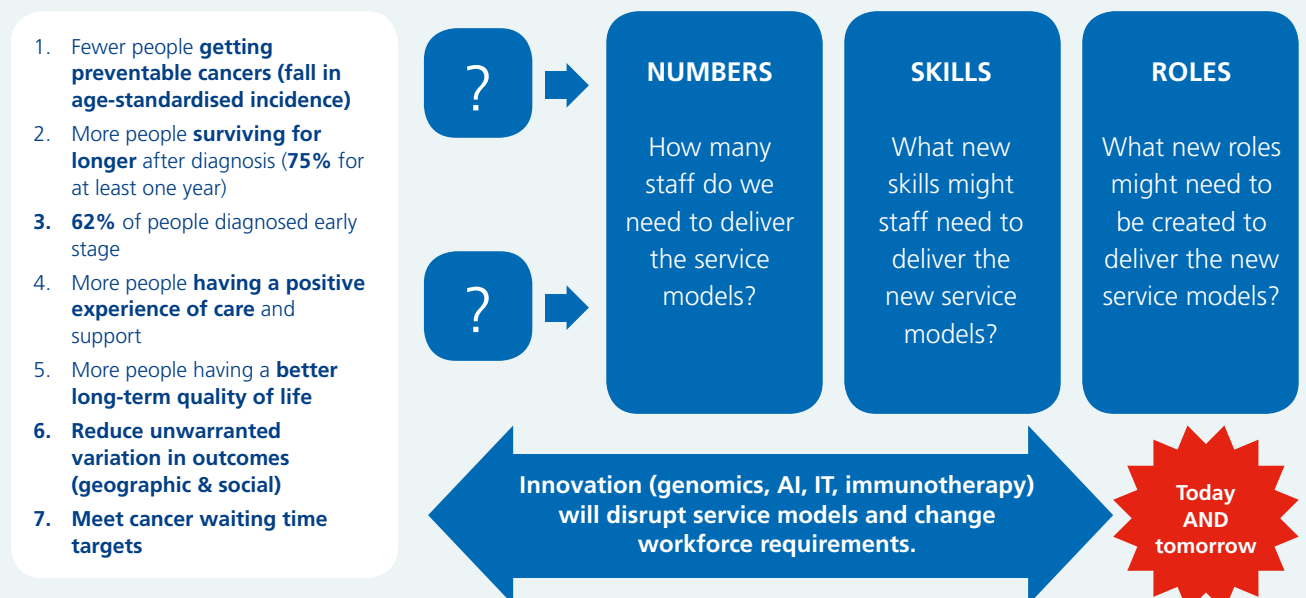
4. The Five Year Forward View: Where we need to be by 2021

Until recently, HEE's workforce plans were based almost exclusively upon the 'demand' of over 300 Trusts as expressed by their commitment to funding future staff posts. This was in line with our statutory responsibilities and enabled us to be informed by the needs of the front line, but too often 'demand' could be conflated with 'affordability'. Following the publication of the Five Year Forward View (FYFV) and the Government's commitment to invest in service transformation, we have worked with NHSE to develop workforce plans in four priority areas (mental health, cancer, urgent and emergency care and primary care), based upon nationally funded programmes of transformation rather than business as usual or marginal, incremental change.

A workforce plan for transformation is developed by understanding (a) the service objectives and assumed activity levels, (b) the service model to deliver them and then (c) assessing the numbers, skills and roles required to make it happen.

Figure 3: Developing a Workforce Plan for Cancer

Outcomes by 2021 → Service Model → Workforce required to deliver the service model



The Cancer Taskforce set out four over-arching ambitions to:

- prevent more cancers
- increase the rates of early diagnosis
- improve the treatment and experience of cancer
- support people to live with and beyond cancer.

Cancer Alliances are now developing service models and pathways to deliver these ambitions in ways that reflects the needs of their population and the configuration of local services. Cancer Alliances have set out plans for emerging service models for improving early diagnosis and living with and beyond cancer. Emerging areas of focus in early diagnosis include interventions in early access, whole pathway redesign, rapid diagnostic and assessment models and secondary care networking.

Within living with and beyond cancer, emerging areas of focus include improving access to the Recovery Package and introducing stratified follow-up pathways so that more patients are supported to self-manage. The potential workforce implications of these approaches were further tested with Cancer Alliances during summer 2017 as part of the development phase of this plan.

These new models of service delivery will require us to support our existing staff to develop new skills, roles and responsibilities, to enable them to employ their expertise in multi-disciplinary teams in different settings and places. More diagnostic activity is likely to move from primary care to community settings, for example, which will require better digital connectivity and place-based employment opportunities, as well as an increase in supply in some areas.

As well as addressing current gaps, we need to invest in the future shape of the workforce to meet the demands of a personalised cancer service. The potential impact of workforce and wider efficiencies has not been factored into the waterfall diagrams within this report, however, achievement of efficiencies will positively contribute in the longer term and are complementary to immediate management actions within the professions highlighted within this report. Local and national actions will need to be aligned with Carter, GIRFT, NHS Right Care and other initiatives to ensure best value and outcomes for patients.

5. Priority areas for action in the short term to deliver FYFV 2021 commitments

Given the difficulties with forecasting future demand for a rapidly changing service and the limitations of an organisational perspective, HEE worked with NHSE to develop a Data and Discussion pack to facilitate conversations with some Cancer Alliances about their current workforce pressures and their emerging service models to deliver the Cancer Taskforce recommendations, focussing initially on early diagnosis and living with and beyond cancer. We have triangulated this local intelligence with our national data on supply and demand and cross referenced it with the areas of concern highlighted in the Cancer Taskforce Report.

This analysis identified 7 initial priority workforce areas where national action is required to support delivery of the FYFV objectives by 2021 whilst we undertake the longer term strategic work to support the transition to new models and meet forecast need. We recognise the central role of other professions such as surgery and palliative care across many cancer pathways, however they were not flagged in the Cancer Taskforce report or by our Cancer Alliances and there are difficulties with how data and activity is currently captured for these groups. We will work with partners to better understand these issues and address them in our longer-term strategy in the summer. The wider contribution of nursing to cancer will also be considered in a follow-up chapter in spring 2018 when we will have access to new census data, but our initial focus will be on the role of the CNS as highlighted by the Cancer Taskforce and subsequently the Cancer Alliances.

Potential priority areas for initial national action

Profession/role	Cancer Taskforce Report	Cancer Alliance Returns	HEE modelling highlights potential employer expressed demand/supply imbalance
Histopathology and health care scientists	✓	✓	✓
Gastroenterology	✓	✓	✓
Clinical Radiology	✓	✓	✓
Diagnostic Radiography	✓	✓	✓
Medical and Clinical Oncology	✓	✓	✓
Therapeutic Radiography	✓	✓	✓
Nursing (CNS)	✓	✓	✓

Since the publication of the Taskforce report in 2015 HEE has already taken action to increase the capacity and skills in some of these key areas, delivering change and growth whilst working with partners to deliver this workforce plan including:

- The expansion of **Clinical Radiology** Post Graduate Medication Education training by 35 programmes annually up to 2021, plus an international recruitment scheme, working with the Royal College of Radiologists and a small number of pilot Trusts to source 30 Clinical Radiologists recruited from late 2017.
- An accelerated **Clinical Endoscopist** training programme to support improvements in earlier diagnosis – 200 Clinical Endoscopists by 2018.
- As part of the Department for Education's Public Sector Returners Programme, HEE is leading a two-year Return to Practice programme for up to **300 former Allied Health Professionals (AHP) and Healthcare Clinical Scientists (HCS)**, including working with PHE to encourage radiographers to return to practice to support the anticipated increase in activity of NHS breast screening programme.

Whilst these actions have been welcome and necessary, the whole system – including employers, commissioners, regulators and professional bodies – now needs to work together, using their respective levers in a concerted and collaborative effort to increase the net supply of staff and skills *initially* in these priority areas. The actions most likely to increase supply over the next four years, broadly fall into three categories:

- (1) Immediate/ongoing actions to make better use of existing supply** (registered staff) through better deployment, retention, time to care, Return to Practice etc. (immediate and ongoing) with everyone supported to work at the top of their skills set. *Locally these are largely the responsibility of employers, although the Department of Health (DH), ALBs, colleges and regulators can be key to removing obstacles or supporting national initiatives.*
- (2) Net expansion of skilled staff over 1-3 years to support growth and transformation**, through providing more, faster and accessible Post Graduate training courses and other in-post learning and development opportunities at scale for clinicians to carry out new procedures or take on new roles, such as endoscopies, Advanced Clinical Practitioner (ACP) or CNSs (within one year) *Traditionally, these have been the responsibility of local employers but NHS Improvement have recently published their ACP Framework and HEE and the professional colleges have a key role to play to ensure national standards are met and ensuring development funding to achieve scale and pace for priority areas.*
- (3) Net expansion of skilled staff over 3-15 years to support growth and transformation** – it takes three years to train a Registered Nurse but the majority go on to undertake a Masters and many undertake a Doctorate study which can equate to a Medical Consultant timescale, which takes between 12-15 years to train. Despite these long lead-in times and an unknown future, we still need to invest in key professions for the longer term, in addition to any actions in (1) and (2) *This is HEE's statutory responsibility for postgraduate medical staff, traditionally based upon forecast demand from Trusts, but increasingly shaped by commissioners in transformation areas such as cancer. Numbers of nurses and AHPs are no longer planned, following the change to the funding method which lifted the cap on numbers in universities.*

The following analysis is focussed upon those areas that Cancer Alliances, the Cancer Taskforce and our own data told us were the professions currently under most pressure, but this approach can usefully be applied to all parts of the workforce where Electronic Staff Record (ESR) data exists and will be applied to other areas in our longer term strategy. We also recognise that for each profession there is a wider support team that will require equal attention and support and that innovations in medicine and technology may fundamentally alter the service model of delivery and therefore the workforce requirements.

A new approach to understanding – and acting upon – the workforce data

For the first time, HEE has applied its 'waterfall model' to individual professions, providing a dynamic approach to analysis to enable them to see how many people have historically been attracted to each training programme, how many tend to join the NHS once they are qualified and how many typically leave within a given year. This new analysis reveals considerable leaks in our training supply line, and highlights opportunities to improve the experience of trainees and patients as well as the return on our public investment. By rolling forward recent observable history, this allows us to focus not just on how many extra posts we are funding, but the net number of staff in post we would expect to see by 2021 if history repeats itself and no further action is taken over and above our planned growth. In the light of this 'do nothing' scenario, with this dynamic methodology allows us to identify the most impactful levers for increasing net supply in each profession within a given timeframe (for some professions and/or geographies, it might be reducing the rate of attrition or retirement; for others the data might suggest a concerted Return to Practice programme, for example).

The following data represents an aggregate picture of the English professions and masks huge regional variations and local labour market issues. Whilst this report necessarily focusses on the national actions we will take to support local delivery, the power of this waterfall methodology lies in the local conversations HEE, Cancer Alliances and employers can have about current and future supply and to agree the actions to increase capacity and skills.

Clinical Radiology

Background

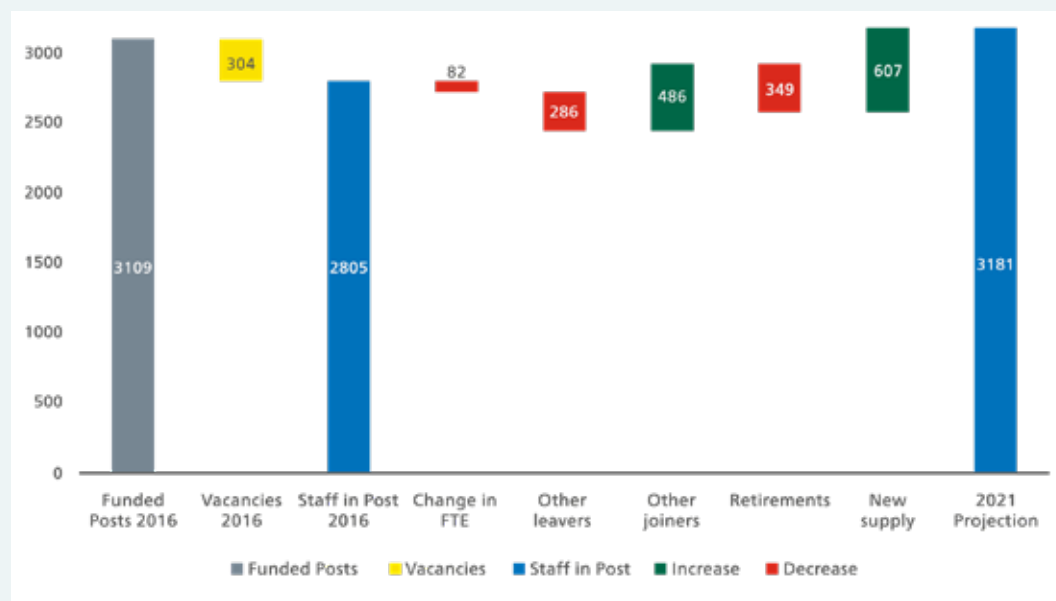
Clinical radiologists interpret images, including those obtained using x-ray, ultrasound, Computed Tomography (CT), Magnetic Resonance (MR) and radionuclide (e.g. Positron Emission Tomography) techniques to diagnose, treat and monitor disease. Advances in technology and in the understanding of how disease is demonstrated on images have increased the use of this discipline in diagnosis, monitoring disease progression and response to treatment and in performing image-guided treatments, the latter often instead of surgical procedures. Almost all other clinical specialities rely on clinical radiology, to function effectively.

Analysis

Clinical Radiology is the largest specialty in the medical workforce for cancer. The NHS Electronic Staff Record at March 2016 indicated 2,805 FTE consultants in post. Data collected by HEE from NHS providers at the same date indicated 3,109 available posts and as such a vacancy rate of approximately 10% comparable with many of the core cancer specialities.

In March 2017, approximately one third (33%) of the NHS consultant workforce in England was comprised of doctors who undertook their primary medical education (i.e. degree or equivalent) outside the UK. Within this total 8% were from the European Economic Area.

Figure 4: Projected change in supply of NHS Clinical Radiology CCT holders 2016 to 2021 (WTE)



Source: HEE medical model, 2017.

Figure 4 shows the projected movements in staff numbers broken down into components of supply. In order to forecast the 'net' number of Clinical Radiologists likely to be working in the NHS by 2021, we look at how many we expect to join the profession compared to how many we expect to leave. Between 2016 and 2021, HEE's projections of joiners into Clinical Radiology indicate that around 22% will have just completed training within the UK (otherwise known as new Certificate of Completion of Training (CCT)); a further 17% are estimated to join England's profession via the Certificate of Eligibility for Specialist Registration (CESR) route or from abroad. Between 2016 and 2021, there are estimated to be 12% leavers from the Clinical Radiology workforce due to age retirement. In the same period, there are an estimated 10% leavers, for reasons other than retirement from the NHS.

In 2016 there were 2,805 clinical radiologists in post. If we take no further action and the above forecasts of joiners and leavers are broadly correct, then in 2021 we would expect to see approximately 3,181 staff in post, an increase of 376 FTE (13 per cent). Although supply would exceed 'demand' in 2020/21 as expressed by Trusts (a roll forward of 2016 demand levels) or by Sustainability and Transformation Partnerships (STPs) (as 1.63% growth across all staff groups), forecast supply remains below what is required. These expression of demand do not appear to match the FYFV outcomes of improved early diagnosis and survivorship that are predicated on an increase in activity of 7%. We also know that Cancer Alliances have expressed concerns around this workforce. It is likely that there will not be enough clinical radiologists working in the NHS to deliver the 2021 ambitions (particularly in the North and the Midlands) unless further urgent action is taken to increase net supply of these and associated professionals who can support the imaging workload.

Recommended actions:

Training for clinical radiology takes at least 12 years to complete encompassing 5 years of general medical training, two years' foundation and five years' speciality training (followed by a further year for trainees wishing to specialise in interventional radiology). Actions to increase supply by 2021 include:

Immediate/ongoing actions to make better use of existing supply

- *Improve retention:* we anticipate losing 12% of the skilled workforce to retirement alone by 2021 and a further 10% for other reasons, with a total forecast number of 349 retirees and 286 other leavers. We know that work/life balance issues as well as rewards are a key factor in the decisions people will make. As part of our new *Cancer Staff Forum Force*, HEE will work with the DH, Royal College of Radiologists, NHSI and NHS Employers to explore incentives to retain this key workforce, including drawing on best practice for flexible working, Retire and Return schemes. If we set an ambition to reduce the number of retirees by 5%, and other leavers by 10%, for example, that would give us an additional **47** members of staff by 2021.
- *International recruitment (IR):* HEE is piloting an IR scheme with the Royal College of Radiologists as part of its Global Learning programme aimed at recruiting another **30** Clinical Radiologists initially, with at least an additional **120** by 2021.
- *Increase the supply pool:* As part of its *Cancer Staff Forum*, HEE will work with the Royal College of Radiologists, the GMC and other partners to explore whether we could broaden the supply pool for qualified Clinical Radiologists and help streamline the process through linking with existing work to improve accreditation and validation, recognising that there is a global market of skilled health workers and there may be some scope to revisit some of these rules post-Brexit
- *Return to practice:* The data suggests that 15% of qualified Consultant Radiologists (689) currently do not work for the NHS. HEE will focus its Return to Practice (RTP) programme upon this key group. If we attracted just 10% back, this would give us an additional **69** Consultants by 2021.

Expansion of skills over 1-3 years to support growth and transformation

- *More effective use of Clinical Radiologists' expertise through radiology networks* technology enabled collaborative models of service delivery across clinical networks can help to address local reporting backlogs, enhance sub-specialty opinions and support more efficient 'on-call' models. Overall, imaging networks are expected to reduce waiting times, streamline patient pathways and improve the quality of experiences for both patients and staff.
- *More efficient use of Clinical Radiologists time by investing in 300 reporting radiographers by 2020* – Radiographer reporting is an effective, efficient and safe way of meeting rising demand for imaging services and maintaining or improving time to diagnosis and crucially free up Clinical Radiologists to use their specialist skills in more complex cancer and other cases. HEE will work with the Society of Radiographers and Royal College of Radiologists to develop the skills of radiographers and improve retention, relieve the pressure on Clinical Radiologists and most important of all, increase the capacity for early diagnosis for the benefit of patients. HEE will work with the professional colleges to develop national standards for image interpretation and to establish multiprofessional academy-style training hubs for this purpose.

Expansion in net number of trainees over 3-15 years to support growth and transformation

- *Reduce trainee attrition and Increase transition to the workforce post training:* Although Clinical Radiology is popular and enjoys a 100% fill rate, we estimate that the levels of attrition from Clinical Radiology training programmes to be of the order of 10%. Improving this by 3% points would increase the numbers of consultants by 23. Around 81% of those completing training will transition into working within the NHS after training after three years of qualifying. There are indications that this transition to NHS employment increases to the high 80s in percentage terms five years after qualifying. Some trainees came from overseas and always intended to return, some undertake international fellowship placements, and some go on to agency work because it pays more and provides greater flexibility. Improving this transition into the NHS by around 5% points could increase the numbers in the NHS by **33** by 2021.
- *Return to Practice:* An estimated 15% of Clinical Radiologists registered in the UK are not working within the UK's NHS. HEE will work with the Royal College of Radiologists to identify and address these issues to increase the numbers of trainees joining the workforce. Attracting around 10% could result in up to **69** by 2021.
- *Expand education and training programmes:* Clinical Radiology achieved a 100% fill rate in each of the last four years, indicating it is popular amongst potential candidates. HEE has been consistently increasing the number of training posts in recent years rising from approximately 1000 in 2012 to 1211 in 2017. HEE announced its intention to increase the number of training programmes by **35** in 2017, which will lead to 35 additional posts each year for the next 5 years. Whilst the annual intake varies for operational reasons the increase in posts has led to the average level rising from about 185 per year to over 220 per year. HEE will consider whether further action is required to increase net supply beyond 2021 in the light of our longer-term strategy.
- *Expand and speed up training capacity:* We know that constraints on training capacity in some areas such as the North and the Midlands can be a real obstacle to expansion. HEE has reviewed the three radiology training academies established in 2005 and is working with them to maximise their capacity to support demand for increases in Clinical Radiology training. HEE will work with Trusts, local workforce planning and commissioning bodies and the professional bodies to support the development and implementation of other local, regional and national imaging academies that can offer education and clinical placements for radiology trainees and radiographers working towards advanced practice roles.

The combined effect of a concerted effort to improve retention, recruit more Clinical Radiologists overseas, increase the number of joiners to the NHS and expand training numbers could produce the equivalent of a net increase of at least **292** additional Clinical Radiologists on top of the 476 forecast in a 'do nothing' further scenario, and an additional **376** Reporting Radiographers by 2021. There is significant regional variation within the data across the country and different areas may choose to be more ambitious depending upon local circumstances.

Histopathology

Background

Histopathologists have an in-depth knowledge of both pathological and clinical aspects of disease, and have key responsibilities for cancer screening, diagnosis and advice regarding appropriate therapies. They work with tissues to provide information on the type, stage, and grade of cancer and the molecular profile and genetic analysis is integrated into their reports in many settings to assess which type of treatment would be most effective. Although this section focusses on histopathologists, there are other pathology disciplines, including cytology, haematology, clinical biochemistry, immunology, microbiology, virology as well as healthcare scientists who make up the majority of the pathology workforce that also make a vital contribution to the patient's cancer journey, and workforce issues are also present in these.

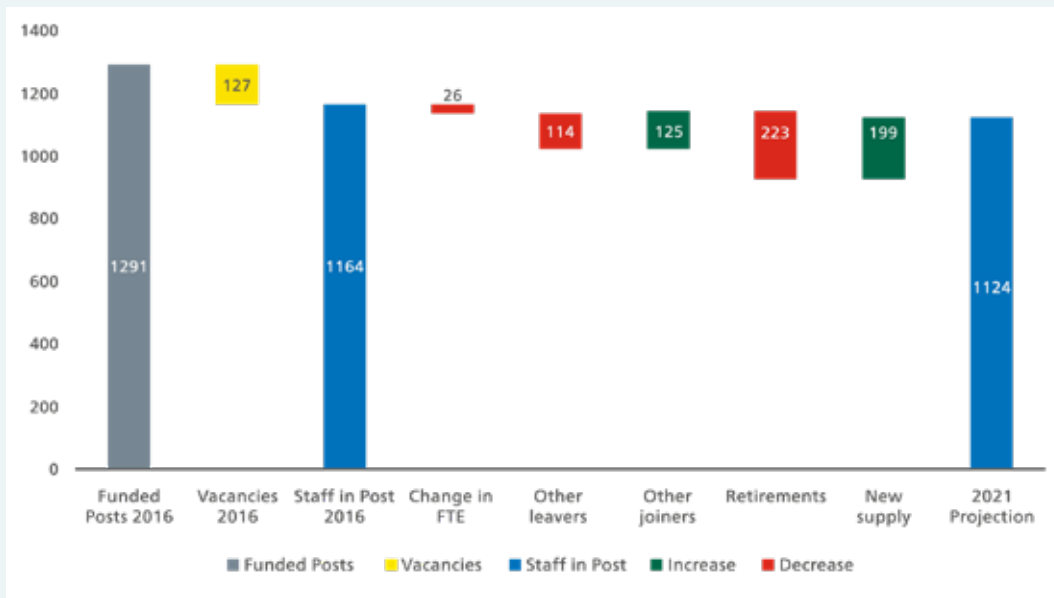
In recent years, histopathology has not grown as much as others and is forecast to decline; meanwhile, developments in molecular diagnostics and changes in clinical guidelines have increased the complexity of many pathology tests and the forthcoming introduction of FIT colon testing is predicted to increase the workload pressure on histopathologists still further. There have been significant advances in automating elements of identification and quantification in histopathology as part of digital pathology solutions, and although these developments will increase the throughput, skilled histopathologists will still be needed to use their expertise and judgement in differential diagnosis, advise on complex or borderline cases, attend MDT meetings and networks as well as validate and quality assure any results. Additionally, the introduction of Consultant Clinical Scientists in Histopathology trained via Scientist Training Programme in Cancer Genomics will help introduce the scientific and technological advances for improved patient outcomes particularly related to stratifying treatment.

Analysis

The NHS ESR at March 2016 indicated 1,164 FTE consultants in post. Data collected by HEE from NHS providers at the same date indicated 1,291 available posts and therefore a vacancy rate of approximately 10%. This is comparable with most of the core cancer medical specialties.

In March 2017, approximately half (52%) of the NHS consultant workforce in England was comprised of doctors who undertook their primary medical education (i.e. degree or equivalent) outside the UK. Within this total 12% were from the European Economic Area. As only a minority of histopathologists are UK trained, this area might be more sensitive to changes such as Brexit.

Figure 5: Projected change in supply of NHS Histopathology CCT holders 2016 to 2021 (WTE)



Source: HEE medical model, 2017.

Figure 5 shows the projected movements in staff numbers broken down into components of supply.

An estimated 15% of Histopathologists registered within the UK are not working within the UK’s NHS. This figure has remained constant over the past six years.

In order to forecast the ‘net’ number of histopathologists likely to be working in the NHS by 2021, we look at how many we expect to join the profession compared to how many we expect to leave. We estimate between 2016 and 2021 around 17% of the whole workforce will come from those who have just completed training in the UK (new ‘CCT supply’). A further 11% are estimated to join England’s profession via the CESR route or from abroad. Between 2016 and 2021, there are estimated to be 19% leavers from the histopathology workforce due to age retirement. In addition, we estimate a further 10% will leave the NHS for other reasons.

In 2016 there were 1,164 staff in post in the NHS according to ESR data. If we take no further action and the above forecasts of joiners and leavers are broadly correct, then in 2021 we could expect to see 1,124 staff in post, an actual decrease in the NHS employed workforce of 40fte (3% reduction compared to an average of 13% growth for all NHS medical specialties). Even according to ‘demand’ as expressed by Trusts (a roll forward of 2016 demand levels) or by STPs (as 1.63% growth across all staff groups), forecast supply remains significantly below both. We know that the FYFV outcomes of improved early diagnosis and survivorship are predicated on an increase in activity of 7%, that histopathologists currently have a key role to play in diagnosis and treatment (particularly in the wake of the new FIT bowel screening programme) and that Cancer Alliances have expressed concerns around this workforce.

It is therefore likely that there will not be enough Histopathologists working in the NHS to deliver the 2021 ambitions unless further urgent action is taken to increase net supply.

Recommended actions:

It takes at least 12 years to train a histopathologist: five years as an undergraduate, two years in Foundation and then another five years in specialist pathology, with cancer and types of cancer as further sub-specialities. HEE is currently working with NHS England to review the Pathology Workforce Group, and to align with new service models but meanwhile, actions to increase supply by 2021 include:

Immediate/ongoing actions to better utilise existing supply

- *Improve retention:* we anticipate losing 1/5 of the skilled workforce to retirement alone by 2021 and a further 10% for other reasons. We know that work/life balance issues as well as rewards are a key factor in the decisions people will make. As part of our new *Cancer Staff Forum*, HEE will work with the DH, Royal College of Pathologists, NHS Improvement and NHS Employers to explore incentives to retain this key workforce, including drawing on best practice for flexible working and Retire and Return schemes. If we set an ambition to reduce the number of forecast retirees by just 5% and 'other leavers' by 10% for example, that would give us an additional **22** members of staff by 2021.
- *Return to practice:* The data suggests that 15% of qualified Consultant Histopathologists (267) currently do not work for the NHS. HEE will focus its Return to Practice (RTP) programme upon this key group. If we attracted just 10% back, this would give us an additional **26** Consultants by 2021.
- *Freedom to lead:* HEE will work with the Royal College of Pathologists and NHS employers and NHS Improvement and NHS England to explore how we might support experienced consultants to spend more time on diagnosing and overseeing complex cancers cases, through better administrative support and digital connectivity, enabling different professions across primary, secondary and tertiary care to provide better treatment and care support for example.
- HEE will include histopathology in its Global Learning Programme, aiming to increase the numbers of international joiners by 20% (**20**). We will also make recommendations to the DH that histopathology should be on the Shortage Occupation List.

Expansion of skills over 1-3 years to support growth and transformation

- *More efficient and effective use of skilled staff* through National Pathology Networks being developed by NHS Improvement and Cancer Alliances
- *Attracting and reskilling related professions:* related professions including healthcare scientists, to increase capacity and free up histopathologists to focus on more complex areas of work. The Royal College of Pathologists is currently piloting a scheme to train reporting biomedical scientists. HEE will establish a taskforce with the Royal College of Pathologists to explore how we might increase diagnostic and dissecting capacity, whilst freeing up more time for Consultant Pathologists to spend on complex cases. The establishment of the consultant clinical scientist in molecular cancer diagnostics will also be further explored and developed. HEE will also work with the Royal College of Pathologists and the NHS England digital pathology network to explore whether digital

developments could support trainees to carry out primary reporting as a means to create additional capacity, free up more senior time for complex cases and improve the skills and retention of our trainees

- *New service models/innovations:* As part of its Taskforce on Pathology, HEE will work with Cancer Alliances, the Royal College of Pathologists and with NHSE and NHSI others as part of the Life Sciences Industry Strategy digital pathology programme to better understand the opportunities presented by new technology alongside forecast increases in volume and complexity and develop workforce models and plans that reflect this, for example how digital pathology to support computer assisted interpretation and remote working might help to improve delivery and productivity. This work will inform our longer-term strategy in the summer 2018.

Increase in net number of trainees over 3-15 years to support growth and transformation

- *Increase fill rate to training posts:* The fill rate for histopathology has historically been strong but worryingly is relatively low at 72% in 2017/18, possibly because students are unsure about the future direction of this profession. HEE will work with the Royal College of Pathologists on an urgent piece of work to understand the root cause of the low fill rate and develop a campaign to promote the pathology curriculum for undergraduates, emphasising the role of histopathology and the key role their expertise plays in the cancer journey. Until this work has been completed, there will only be marginal growth of seven new training posts in histopathology this year, but we will revisit this position in the light of our work on fill-rate and the impact of technology on service models in advance of 2019/20 investment planning round.
- *Improve attrition and increase transition to the workforce post training:* We estimate that about three quarters of people joining the Histopathology training programme ultimately complete the course and receive a CCT that allows them to join the specialist register. Around 71% of those completing training in Histopathology will transition into working within the NHS three years of qualifying (increasing to around 80% after five years). HEE will work with the Royal College of Pathologists to urgently identify problems and solutions to reduce attrition and increase supply from the training pipeline. If we reduced attrition by just 5% and improved the transition from CCT qualification to employment by just 5% then by 2021 this would give us an additional **26** newly qualified Histopathologists.

There is significant regional variation beneath these national numbers. Nevertheless, the combined effect of a concerted system-wide effort to reduce the number of leavers from the NHS, and increase the number of joiners to funded posts would give us a potential **net increase of 94 histopathologists, an 8% increase from the 'do nothing' further forecast by 2021 across England resulting in a 54 FTEs (5 %) increase on the 2016 planned position of – 40** (although some areas may choose to be more ambitious on the different actions as well as the total, depending upon local need).

Gastroenterology

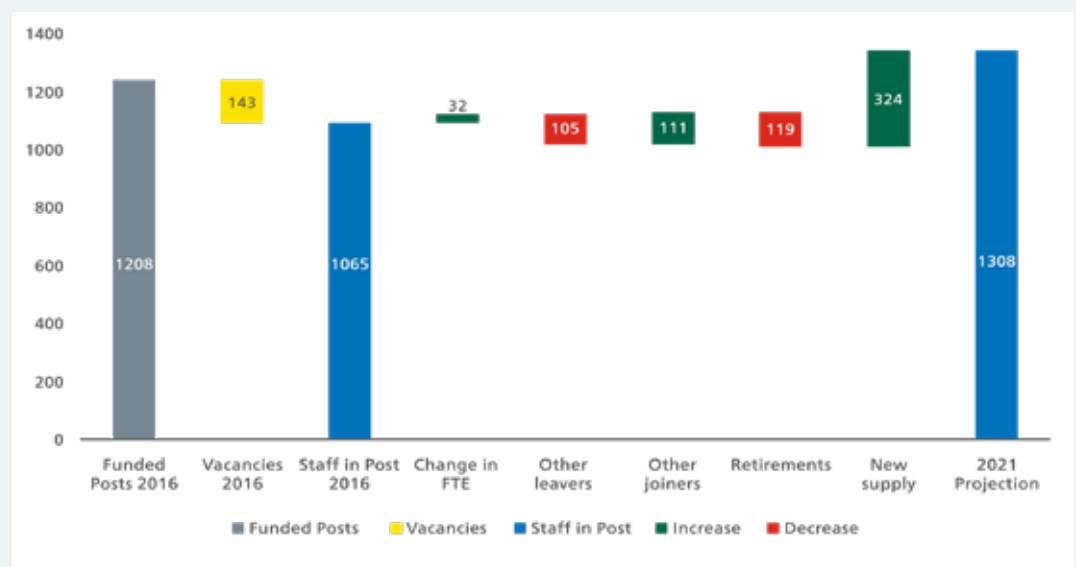
Background

Gastroenterologists are doctors who investigate, diagnose, treat and prevent all gastrointestinal (stomach and intestines) and hepatological (liver, gallbladder, biliary tree and pancreas) diseases. Trained gastroenterologists develop and run endoscopy services for diagnostic, therapeutic and screening endoscopy for diseases including but not exclusive to cancer. All specialists are competent at upper (OGD) lower (flexible sigmoidoscopy) and colonoscopy gastrointestinal (GI) endoscopy and some will have had additional training in advanced treatment techniques that avoid surgery (e.g. mucosal dissection and hepatobiliary endoscopy (ERCP). Increasing the volume of and reducing the wait for endoscopies is a key part of our strategy to increase early diagnosis and survivorship. Gastroenterologists undertake both diagnostic and therapeutic endoscopy procedures in both a service and screening setting. However, because this is just one of many skilled tasks that they perform within their clinical workload, (a) it can take several years to reach competence in multiple modalities and (b) once competent, only a percentage of their time is spent performing endoscopy alongside outpatient clinics, specialist ward rounds and acute general medical duties.

Analysis

The ESR data at March 2016 indicated 1,065 FTE consultants in post. Data collected by HEE from NHS providers at the same date indicated 1,208 available posts and as such a vacancy rate of approximately 12% – the highest within the core cancer specialties. In March 2017, approximately three tenths (29%) of the NHS consultant workforce in England was comprised of doctors who undertook their primary medical education (ie degree or equivalent) outside the UK. Within this total 6% were from the European Economic Area.

Figure 6: Projected change in supply of NHS Gastroenterology CCT holders 2016 to 2021 (WTE)



Source: HEE medical model, 2017.

figure 6 shows the projected movements in staff numbers broken down into components of supply.

In order to forecast the 'net' number of gastroenterologists likely to be working in the NHS by 2021, we look at how many we expect to join the profession compared to how many we expect to leave. Between 2016 and 2021, HEE's projections of joiners into Gastroenterology indicate that around 30% will have just completed training within the UK (otherwise known as new 'CCT supply'); a further 10% are estimated to join England's profession via the CESR route or from abroad.

Between 2016 and 2021, there are estimated to be 11% leavers from the Gastroenterology workforce due to age retirement, with an estimated 10% leavers for other reasons in the same period.

In 2016 there were 1,065 staff in post in the NHS according to ESR data. If we take no further action and the above forecasts of joiners and leavers are broadly correct, then in 2021 we could expect to see 1,308 staff in post, an increase of 243 (23 % growth compared to an average of 13% for all NHS medical specialties). The demand for Gastroenterologist posts expressed by Trusts and early drafts of STPs indicates limited further growth. We know however, that the FYFV outcomes of improved early diagnosis and survivorship are predicated on an increase in activity of 7% in general and there could be as many as [21k] additional endoscopies required. The Cancer Taskforce Report and Cancer Alliances have also expressed concerns around this workforce, suggesting further action will be needed to further increase net supply by 2021.

Recommended actions

Immediate/ongoing actions to make better use of existing supply

- *Improved retention:* around 105 are expected to leave by 2021 should we improve retention by 10% points we could retain an additional **11** by 2021.
- *Working longer:* around 119 FTE are expected to retire by 2021. Should we encourage the numbers of people to continue to work by 5% points there would be an additional **six** into the workforce.
- *Reducing vacancies:* HEE will work with NHSI to understand how many of the vacancies (12%) are gaps in service as opposed to bank and agency, with a view to reducing vacancies down and work with the British Society of Gastroenterology, JAG, NHSI and employers to understand and tackle the root cause.
- *RTP campaign:* An estimated 22% of Gastroenterologists registered within the UK are not working within the NHS. This proportion has steadily declined since 2013 when this proportion was an estimated at 33%. HEE will include Gastroenterology in its national RTP programme with the aim of attracting **14** back to the NHS by 2021.
- International recruitment could result in at least an additional **12** gastroenterologists by 2021.

Expansion of skills over 1-3 years to support growth and transformation

- *Expand the number of clinical endoscopists:* Working with Joint Advisory Group (JAG), HEE has developed an accelerated seven-month clinical endoscopist programme with the aim of increasing access to diagnostics, creating extra skilled capacity and helping to free up the existing medical workforce to focus on more complex cases that may require therapeutic

interventions. The current scheme will produce **200** clinical endoscopists by 2018. We will produce an additional 200 by 2021 [including some backfill and supervision costs], drawing on the learning to date and the need to support Trusts and individuals in these up-skilling/Advanced Practitioner opportunities. As well as increasing the capacity to carry out investigations, (we estimate 400 clinical endoscopists could undertake 450,000 endoscopies a year by 2020), potentially freeing up more Consultant Gastroenterologists' time for complex cases if Trusts support and protect this additional time.

- HEE will work with the British Society of Gastroenterology to look at further models to expand diagnostic capacity, such as freeing up the capacity of Specialist Registrars and possibly reducing medical commitments for periods of time to allow accelerated learning so that competence can be gained and deployed into the service at a faster pace.

Expansion of net number of trainees over 3-15 years to support growth and transformation

- *Reduce attrition from training programmes:* recruitment to the specialty is strong with 100% fill in 2017, suggesting it is popular. We estimate that in the order 90 – 95% of people joining the Gastroenterology training programme ultimately complete the course and receive a CCT that allows them to join the specialist register. Should we lower attrition by 2.5% points we would hope to retain **11** more Gastroenterologists by 2021.
- *Improve the numbers of qualified Gastroenterologists that join the NHS,* Around 67% of those who completed training as Gastroenterologists will transition into working within the NHS three years after training. There are indications that this transition to employment increases in the five years after qualifying to around three quarters as people complete research and/or wait for the ideal vacancy. We will work with the British Society of Gastroenterology and NHS Improvement and employers to identify actions to improve the rate of transition into employment in the NHS from training. Should we improve the transition of newly qualified gastroenterologists by around 5% points we are likely to secure **19** more into the NHS.
- *Education and training programmes:* the total number of training posts has remained broadly stable in recent years, but the number of staff in post is forecast to rise by 23%. In addition to the above steps to improve supply, HEE will consider whether further action is required to increase net supply beyond 2021 in the light of our longer-term strategy (to be published summer 2018 in advance of the 2019/20 investment round).

There are significant variations across the country, nevertheless, the combined effect of a concerted effort to reduce vacancies, recruit gastroenterologists from other sectors and release more of their time to use their expertise by expanding the number of endoscopists will significantly increase diagnostic capacity and could produce the equivalent of a net increase of 73 additional gastroenterologists **on top of the 243 under a 'do nothing' further scenario**, and **200** additional clinical endoscopists by 2021 although different areas could choose to be more ambitious depending upon local needs.

Clinical Oncology and Medical Oncology

Background

Clinical and Medical Oncology are complementary disciplines and there is some overlap in their respective roles. Clinical oncologists are specialist physicians trained in the care of the full range of malignant diseases. They are the only specialists trained in the assessment, prescription and treatment of cancer using (conventional and molecular) radiotherapy. Clinical oncologists are also trained in the use of systemic therapies, e.g. cytotoxic chemotherapy, biological and endocrine therapies, and will manage patients throughout the cancer pathway. In the acute disease phase, clinical oncologists aim to cure (radical or curative treatment) or improve the chances of cure (adjuvant treatment). In later disease stages clinical oncologists provide palliative treatment to control symptoms, or improve duration of survival without expectation of cure. Into the future, clinical oncologists will be responsible for delivering innovative intensity-modulated radiotherapy (IMRT), stereotactic ablative radiotherapy (SABR) and proton beam therapy. Clinical oncologists work with therapy radiographers who are responsible for administering radiotherapy treatments.

Medical Oncology is a broad-based clinical specialty responsible for ensuring state-of-the-art therapies for cancer are delivered within a framework of care for the patient as an individual. Medical Oncologists are physicians who specialise in advising on all aspects of cancer treatment including surgery and radiotherapy. As above, there is some overlap in the respective roles of Clinical and Medical Oncologists – in particular, Medical Oncologists specialise in delivering systemic therapies – they do not prescribe or administer radiotherapy. Increasingly medical oncologists see patients at the outset of their disease for consideration of adjuvant and preoperative (neoadjuvant) therapies.

Unlike other professions in this report, oncologists are not a shared workforce as they work exclusively for cancer patients. As cancer treatment becomes ever more complex, personalised and network based, the unique role and skills of oncologists are likely to become more important as the professional who 'holds the ring' on individual patient care across networks, is at the forefront of the latest research and developments and access to clinical trials, with the skills and experience to communicate options and support individual and informed choices.

Issues with coding in ESR, and, in particular, with clear evidence of mis-coding and of code-switching between years, plus the fact that in some units Consultants are employed by Academic Institutes means separate analysis of these two disciplines is difficult and potentially misleading. Hence our analysis covers the two simultaneously as this is likely to be the most representative.

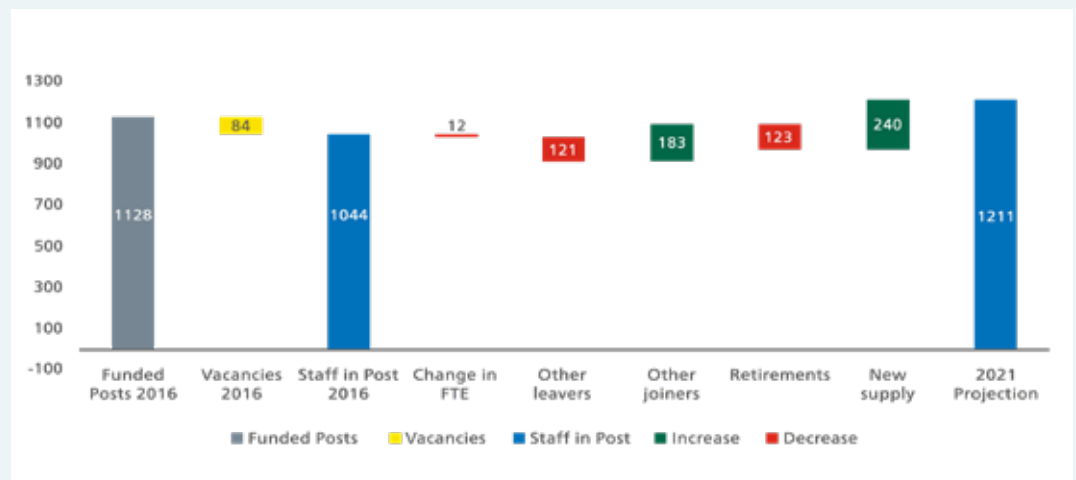
Analysis

The NHS ESR data at March 2016 indicated 686 FTE clinical oncology and 358fte medical oncology consultants in post: a combined total of 1,044. Data collected by HEE from NHS providers at the same date indicated 1,128 available posts. This data indicates vacancy rates of approximately 5% in Clinical Oncology and 14% in Medical Oncology (but please note concerns re accuracy of the two component workforces), and a combined vacancy rate of 7%. In March 2017, approximately one quarter (27%) of the NHS Clinical Oncology consultant workforce in England was comprised of doctors who undertook their primary medical education (i.e. degree or equivalent) outside the UK. Within this total 9% were from the European Economic Area.

Figure 7 shows the projected movements in staff numbers broken down into components of supply.

Figure 7: Projected change in supply of NHS CT holders 2016 to 2021 (WTE)

Clinical and medical oncology combined



Source: HEE medical model, 2017.

In order to forecast the ‘net’ number of oncologists likely to be working in the NHS by 2021, we look at how many we expect to join the profession compared to how many we expect to leave. Unlike many of the specialisms reviewed here, which are ‘shared’, this specialism has a focus on the treatment of Cancer, so this trend is therefore of particular interest to those seeking to maximise participation in the NHS workforce.

Between 2016 and 2021, HEE’s projections of joiners into Clinical and Medical Oncology indicate that 23% will have just completed training within the UK (otherwise known as new ‘CCT supply’); a further 18% are estimated to join England’s profession via the CESR route or from abroad.

Between 2016 and 2021, there are estimated to be 123 (12%) leavers from the Clinical and Medical Oncology workforce due to age retirement. In the same period, there are an estimated 12% leavers, for reasons other than retirement, from the NHS. Eleven percent of Medical and Clinical Oncologists, whilst registered in the UK are not employed by the NHS.

In 2016 there were 1,044 clinical and medical oncologists in post. If we take no further action and the above forecasts of joiners and leavers are broadly correct, then in 2021 we would expect to see approximately 1,211 staff in post, an increase of 167 FTE (16 per cent). However, even according to 'demand' as expressed by Trusts (as a roll forward of 2016 demand levels) or by STPs (as 1.63% growth across all staff groups), this forecast supply would be inadequate to meet the forecast increase in prevalence of cancer, complexity and personalised approaches, alongside greater survivorship and subsequent monitoring and care. Neither of these figures represent a meaningful forecast of actual patient demand yet forecast supply remains significantly below both. We know that the FYFV outcomes of improved early diagnosis and survivorship is predicated on an increase in activity of 7%, and that Cancer Alliances have expressed concerns around this workforce.

There are particular challenges associated with tracking these two specialties due to coding issues within trusts but regardless of this it is likely that there will not be enough clinical and medical oncologists working in the NHS to deliver the 2021 ambitions unless further action is taken to increase supply.

Recommended actions to close the gap between demand and supply by 2021:

It takes at least 11-12 years to train a clinical or medical oncologist and we need to undertake more work into their roles going forwards as new service models are developed. Meanwhile, actions to increase supply by 2021 will include:

Immediate/ongoing actions to better utilise existing supply

- *Improve retention:* we anticipate losing 12% of the skilled workforce to retirement by 2021 and a further 12% for other reasons. There are 123 retirees and 121 others forecast to leave. We know that work/life balance issues as well as rewards are a key factor in the decisions people will make. As part of our new *Cancer Staff Forum*, HEE will work with the DH, Royal Colleges, NHS Improvement and NHS Employers to explore incentives to retain this key workforce, including drawing on best practice for flexible working and Retire and Return schemes. If we set an ambition to reduce the number of people who planned to retire by 5%, and leave for other reasons by 10%, for example, that would give us an additional **18** members of staff by 2021.
- HEE will include oncology in its Global Learning Programme, aiming to increase the numbers of international joiners by 20% (**18**). We will also make recommendations to the DH that oncology should be on the Shortage Occupation List.
- *Return to practice:* The data suggests that 11% of qualified Oncologists (183) currently do not work for the NHS. Working with the ACP and RCP, HEE will focus its Return to Practice (RTP) programme upon this key group. If we attracted just 10% of qualified oncologists back to the NHS, for example, this would give us an additional **18** Consultants by 2021.

Expansion of skills over 1-3 years to support growth and transformation

- *Harmonise acute oncology across networks:* There is too much variation in the scope and quality of services available across the country, particularly between the large teaching centres and smaller DGHs. NHSE will work with Cancer Alliances to harmonise acute oncology across networks to provide better support to patients and clinical colleagues as well as optimising resources and skills
- *Increase skill mix* – there are upskilling opportunities for therapy radiographers who are already delivering benefits in cancer services:

Expansion in net number of trainees over 3-15 years to support growth and transformation

- *Improving fill rates:* The fill rates for clinical and medical oncology have varied since 2015, but have remained in the mid 80% over the past three years. An improvement in the rate of fill by around 5%, would increase the numbers of in the longer term by **20**.
- *Reduce trainee attrition and Increase transition to the workforce post training:* We estimate that of trainees who begin training in medical or clinical oncology around one in ten will not complete their programme. An improvement of 3% in reducing attrition would result in around **nine** more oncologists. Around 71% of those completing training in either Medical or Clinical oncology will transition into working with the NHS three years after qualifying. If we could improve the numbers of CCT holders in oncology joining the NHS in line with other professions for example (i.e. 77%) then we could expect to see **13** extra oncologists working in the NHS by 2021.
- *Education and Training posts:* the number of training posts in oncology has remained broadly stable in recent years although the number of Consultants actually in post has increased by **24%**. We will need to do more work with NHS England and other partners to understand the service models going forward and the likely impact on this profession. In advance of this, given the central role of oncology in the cancer workforce and the anticipated increase in demand and activity, in 2018/19 we will increase the number of training opportunities advertised in 2018 by **10%**. HEE will undertake more work with NHSE, Cancer Alliances and the Royal College of Physicians to better understand future service models and the role of oncologists in delivering them and review in autumn 2018 for our 2019/20 investments.
- *Improve data collections:* The Department Health will also improve ESR coding for this profession as part of its wider review.

There are significant variations around the country, nevertheless. The combined effect of a concerted effort to improve the numbers of qualified oncologists joining or returning to the NHS and improved retention could produce the equivalent of a net increase of **76** clinical and medical oncologists in post by 2021 on top of the 167 forecast under the 'do nothing further scenario, with **10%** more training opportunities in 2018 to support continued growth beyond 2021. Different areas may choose to be more ambitious depending upon local needs.

Diagnostic Radiography and Therapeutic Radiography

The following analysis outlines trends in the training and employment of Diagnostic and Therapeutic Radiologists. This analysis based on the Electronic Staff Record allows us to present separate insight into both occupations. There are a number of themes for which data has been collected for occupations combined.

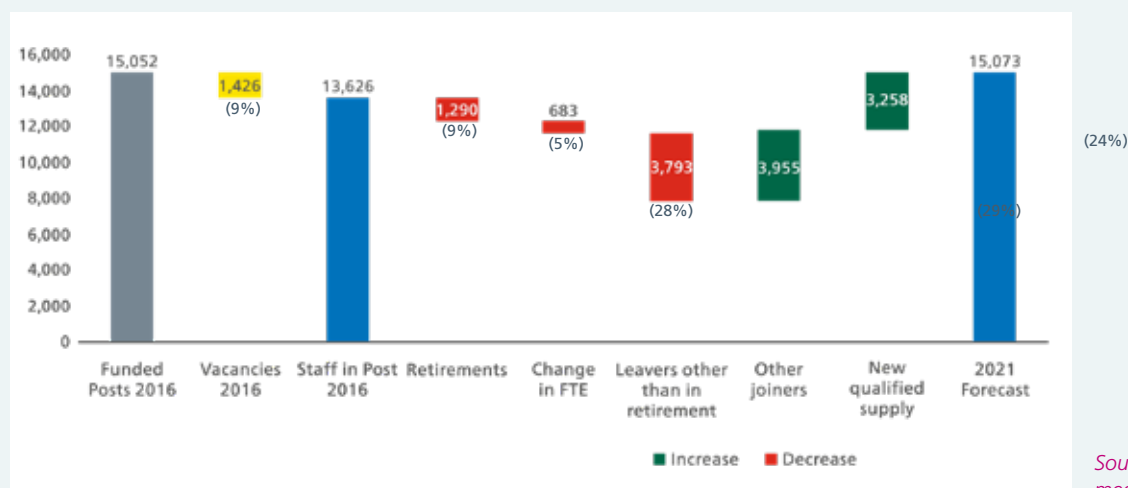
Diagnostic Radiography

Analysis

Diagnostic radiographers operate highly sophisticated equipment, using x-ray, ultrasound and magnetic resonance imaging technology to capture detailed clinical images of inside the body. These images are often crucial to detecting the first signs of disease and making a correct diagnosis. Clinical images are also used to plan and monitor cancer treatment and in surveillance programmes to look for recurrence or spread of cancer. To practice as a diagnostic radiographer, you must be registered with the Health and Care Professions Council (HCPC). In order to gain entry to the register, it is necessary to successfully complete an approved degree in diagnostic radiography, which could take three years for a BSc degree course and two years for a postgraduate MSc programme.

Figure 8: Projected change in supply of NHS Diagnostic Radiographers 2016 to 2021 (WTE)

Figure 8: Projected change in supply of NHS Diagnostic Radiographers 2016 to 2021 (WTE)



Source: HEE non-medical model, 2017.

Diagnostic Radiography is the largest professional group in the clinical cancer workforce by the size of its training cohort, and remains competitive – achieving an average 101% fill rate over the past four years, indicating it is popular amongst potential candidates.

In 2016 NHS Trusts in England indicated that they had 15,052 funded posts in Diagnostic Radiography, with a vacancy rate of around 9%. Between 2016 and 2021, HEE's projections of joiners into Diagnostic Radiography indicate that around 24% of 2016 workforce will have just completed training within the UK. A further 29% are estimated to join England's profession

from a range of sources other than direct from training, such as from the independent sector, returners to work and The total number of registered radiographers (HCPC register combines both Diagnostic and therapeutic Radiographers. In the UK the number has grown steadily over the past 10 years with an increase of 9,908 people since 2006 (a 45% increase). Only 57% of registrants are employed in the English NHS, with a further 25% employed by the NHS in the devolved nations.

Between 2016 and 2021, there are estimated to be 9% leavers from the Diagnostic Radiography workforce due to retirement. In the same period, there are an estimated 28% leavers, for reasons other than retirement, from the NHS. Although the total net position remains fairly stable (and similar to the pattern of AHP movement in general), the flows out and back into the NHS from other settings can be inefficient and disruptive.

In 2016, 75 per cent of all HCPC registered radiographers – both diagnostic and therapeutic – were domiciled in England. Of those that are English domiciled in 2016, the proportion that were employed within the NHS was 76%. It suggests that in 2016 there were 5,735 registrants in England who could have potentially chosen to work in the NHS but did not do so. This could indicate challenges with the relative attractiveness of the NHS as an employer, an increase in commercial organisations providing NHS services, or growing diversity of employment opportunities within the profession.

In 2016 there were 13,626 diagnostic radiographers in post. If no further action were taken and the above forecasts of joiners and leavers are broadly correct, then in 2021 we would expect to see approximately 15,070 staff in post, an increase of 11 per cent. Even according to 'demand' as expressed by Trusts (as a roll forward of 2016 demand levels) or by STPs (as 1.63% growth across all staff groups) forecast supply remains significantly below both. We know that the FYFV outcomes of improved early diagnosis and survivorship is predicated on an increase in activity of 7%, and that Cancer Alliances have expressed concerns around this workforce. Unless further action is taken to increase supply, it is unlikely we will have sufficient Diagnostic Radiographers to deliver our 2021 ambitions.

Recommended actions:

Training to become a Diagnostic Radiographer can take three (England) or four (Scotland) years, full time or up to six years part time (BSc). There are also postgraduate (MSc) programmes usually taking up to two years. We need to undertake more work into their role going forwards as new service models are developed. Meanwhile, actions to increase supply by 2021 will include:

Immediate/ongoing actions to utilise existing supply

- *Improved retention:* 28% of Diagnostic Radiographers are expected to leave for non-retirement reasons. HEE will undertake some urgent qualitative research with the Society of Radiographers and NHS Employers to understand why so many are leaving and to reduce the attrition/increase the retention rate by 10% thereby achieving additional supply of **379fte** radiographers. We will also explore options for keeping experienced staff longer. A 5% improvement in the retirement rate would deliver **64** more staff by 2021.

- *Targeted Return to Practice Campaign:* There are around 5,700 qualified radiographers, a proportion of which are likely to be 'diagnostic' radiographers in England not working for the NHS. HEE is operating a national AHP RTP scheme but we have not at this stage set a specific ambition for diagnostic radiography.
- *International workforce* – Diagnostic Radiographers are on the Shortage Occupation List. This is a useful lever and we have set an ambition for this route to provide us with an additional **89** staff.

Expansion of skills over 1-3 years to support growth and transformation

- *Skill mix: Advanced and assistant practitioners:* 27% of all (2016) clinical imaging investigations are now reported by radiographers or sonographers including over 70% of routine x-ray images. Radiographer reporting is an effective, efficient and safe way of meeting rising demand for image services and maintaining or improving time to diagnosis; it can be delivered at lower economic cost than radiologist reporting in some contexts (Hardy et al., 2013) and crucially can free up Clinical Radiologists to use their specialist skills in complex cancer and other cases; career development into advanced practice roles could help improve retention for radiographers. HEE will work with the Society of Radiographers and the Royal College of Radiologists to produce **300** additional reporting radiographers by 2020 to help develop and standardise their skills, relieve the pressure of routine reporting on Clinical Radiologists and most important of all, increase capacity for early diagnosis in a safe and standardised way for the benefit of patients.
- *Apprenticeship trailblazers:* widening access to radiography through apprenticeships and by establishing sonography as a separate profession with its own independent supply line so as not to recruit from the existing radiography workforce, should help to increase capacity in the medium to long term.

Expansion of net trainees to support growth and transformation

- HEE no longer has control over the planning or commissioning of AHPs (including radiographers). In addition to these immediate actions, we will work with the Society of Radiographers and other partners to consider the role, skills and numbers needed in the future and how we can support employers and HEI to retain more trainees as part of our longer-term strategy.
- HEE has been working with NHS and Higher Educational Institutions through our 'RePAIR' programme to reduce attrition from courses. If we achieve a 5% points improvement on historic levels, this would deliver **248** more staff by 2021.

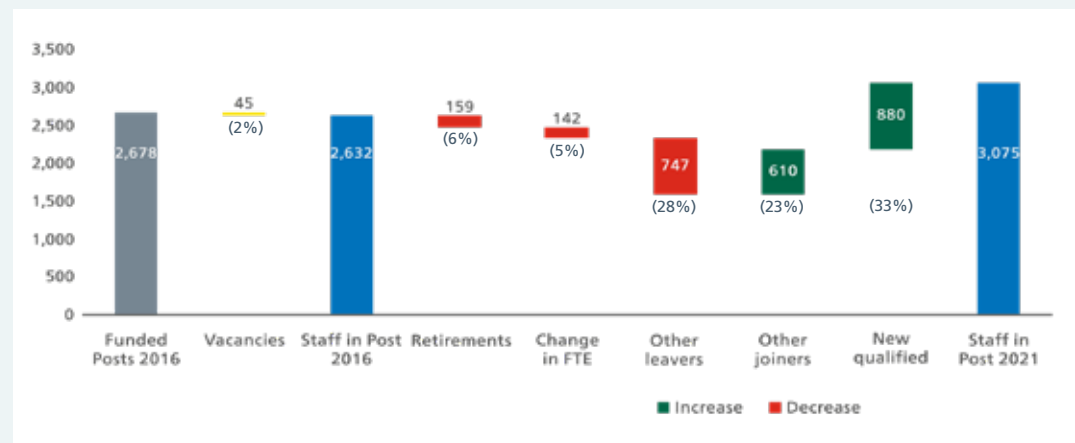
Therapeutic Radiography

Background

Therapeutic radiographers operate highly sophisticated equipment, planning and delivering radiotherapy – high-energy ionising radiation, to treat cancer. Therapeutic radiographers, who specialise in a particular clinical pathway (e.g. breast, lung cancer) are responsible for streamlining and focussing care and support for patients across the radiotherapy pathway. Skills-mix and new roles at advanced and consultant levels of practice for therapeutic radiographers have been highlighted as key to improving access to innovative and advanced radiography treatments (CoR, 2014). To practise as a therapeutic radiographer, you must be registered with the Health and Care Professions Council (HCPC). In order to gain entry to the register, it is necessary to successfully complete an approved degree in radiotherapy, which could take three years for a BSc degree course and two years for a postgraduate MSc programme.

Analysis

Figure 9: Projected change in supply of NHS Therapeutic Radiographers 2016 to 2021 (WTE)



Source: HEE non-medical model, 2017.

In 2016 NHS Trusts in England indicated that they had 2,632 funded posts in Therapeutic Radiography. They reported a vacancy rate of around 2%. Between 2016 and 2021, HEE's projections of joiners into Therapeutic Radiography indicate that around 33% will have just completed training within the UK. A further 23% are estimated to join England's profession from abroad.

Between 2016 and 2021, there are estimated to be 6% leavers from the Therapeutic Radiography workforce due to retirement. In the same period, there are an estimated 28% leavers, for reasons other than retirement, from the NHS. Although the total net position remains fairly stable (and similar to the pattern of AHP movement in general), the flows out and back into the NHS from similar other settings is inefficient and disruptive.

Recommended actions:

Training to become a Therapeutic Radiographer can take three years. We need to undertake more work into their role going forward as new service models are developed. Meanwhile, actions to increase supply by 2021 will include:

Immediate/ongoing actions to better utilise existing supply

- *Improved retention:* 28% of Therapeutic Radiographers are expected to leave for non-retirement reasons. HEE will undertake some urgent qualitative research with the Society of Radiographers and NHS Employers to understand why so many are leaving and to reduce the attrition/increase the retention rate by 10% thereby achieving additional supply of **75 FTE** radiographers. We will also explore options for keeping experienced staff longer. A **5%** improvement in the retirement rate would deliver **eight** more staff by 2021.

Expansion of skills over 1-3 years to support growth and transformation

- *Skill mix:* Capacity to upskill experienced therapy radiographers into Advanced Clinical Practitioner roles could be achieved through recruiting more (practitioner level) therapy radiographers and/or developing support workers/assistant practitioners into registered therapy radiographers.
- *New service models/innovations:* exploring how technology, innovative practice and new service models including networked services can help to improve delivery.
- *Apprenticeship trailblazers:* widening access to radiography through apprenticeships will help overcome barriers to accessing training (removal of bursaries/paying tuition fees).

Expansion of net number of trainees to support growth and transformation

- Recent data from the Society of Radiographers demonstrates a reduction in applications to therapeutic radiography programmes in England for 2017 with 4 out of 11 programmes under recruiting and overall 7% of available places unfilled. HEE is no longer responsible for planning this workforce but we will work with the Society to support HEIS and employers to improve fill rate and reduce attrition.
- In addition to these immediate actions, we will work with the Society of Radiographer and other partners to consider the role and skills needed in the future and how we can attract and retain more trainees to these posts as part of our longer term strategy. If we achieve a 5% points improvement on historic attrition levels this would deliver **68** more staff by 2021.

There are significant variations across the country, nevertheless the combined effect of a concerted effort to retain and attract more people back to substantive posts in the NHS and upskilling other health care professionals to increase capacity could produce the equivalent of a net increase of **1,890** diagnostic radiographers and **175** therapeutic radiographers in post by 2021, on top of the **780** and **443** already anticipated under the 'do nothing' further scenario. Different areas may choose to be more ambitious depending upon local needs.

The Wider Workforce

Nursing

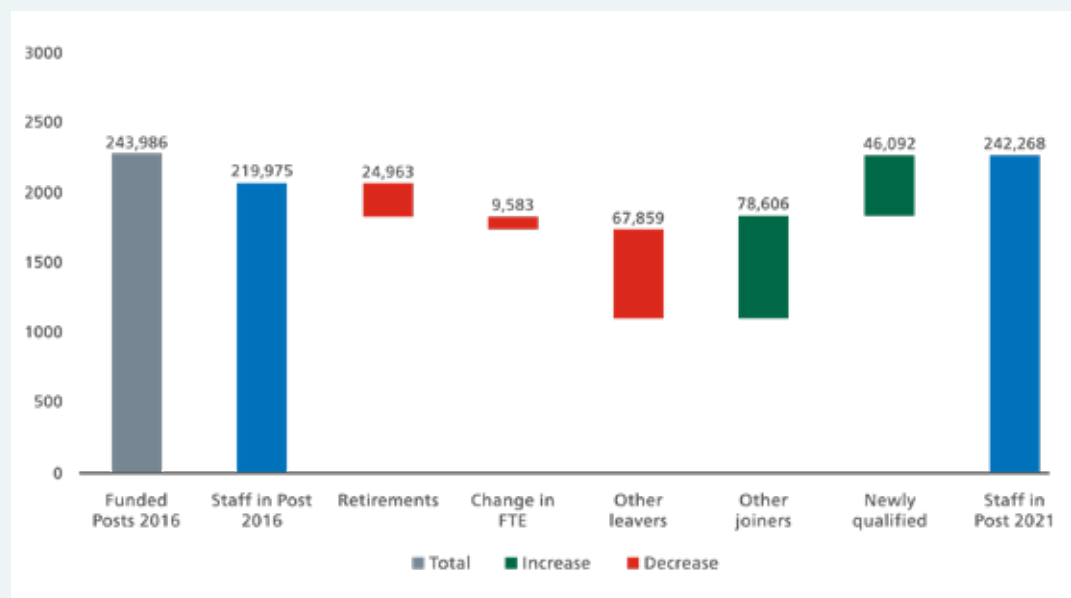
The nursing workforce makes a critical contribution to the delivery of cancer services across primary, secondary and community care, not just for diagnosis and treatment but as a key part of the recovery package and living with and beyond cancer. However, nurses are not recognised or coded in a way that allows us to accurately estimate the numbers currently supporting cancer services. And whereas medical and clinical planning often goes hand in hand at ward level, we have not traditionally done this at national level. (i.e. if the number of Consultant Oncologists is set to increase, how many nurses might be needed in order to ensure a safe and effective service for patients, given that chemotherapy nurses are key to delivery?).

The way in which the nursing profession is currently recorded by the NHS means we do know that some 6,000 nurses have been coded to Oncology, but this does not as yet help us to understand how this maps to the specific skills required to deliver high quality cancer care. The Macmillan Cancer Support census from 2014 also tells us that there were 3,088 WTE specialist adult cancer nursing posts (124 vacant) in England.

Overall, we know that in 2016 there were 220,000 adult nurses in post and that Trusts have increased posts by approximately 10% (30,000) in response to National Quality Board guidance (2013). Between 2012 and 2016 the NHS in England created 36,817 FTE new adult nursing posts. However, it was only able to increase its headcount by 11,814 FTE (5.7%). Whilst this rate of workforce growth is high by historic standards, the rapid expansion in new posts has resulted in high vacancy levels. Vacancies peaked at 9.8% in 2016, but have fallen back to 8% in 2017.

HEE has also increased Registered Nurse commissions by over 15% since 2012 these registrants joining the work force from 2017. Following the marketisation of nurse training places HEE will fund a further 5000 per year from 2018.

Figure 10: NHS adult nursing expected change in supply 2016 to 2021



Source: HEE analysis of NHS Electronic Staff Record data

Macmillan Cancer Support are currently carrying out a *Specialist Adult Cancer Nurse Census* to understand the current size and location of the specialist cancer nurse workforce. This will enable us to develop a much more comprehensive picture of how many specialist nurses are working in cancer and what further action and investment might be required to ensure timely and good quality patient care and experience. Rather than second guess this data, we will publish a full chapter on the nursing as an addendum to the Cancer Workforce Plan in spring 2018 and consider what actions we might take to support and enhance the wider nursing contribution to cancer.

In advance of this, below we set out actions we are taking in relation to Cancer Clinical Nurse Specialists, which were identified by the Taskforce and Cancer Alliances as a key priority.

Cancer Clinical Nurse Specialists

The role of key worker and coordinator – often fulfilled currently by Cancer Clinical Nurse Specialists (CNS) – makes a significant contribution to a positive overall patient experience. Cancer incidence for most common cancers. The 20 Most Common Cancers.) and outcomes. The role of CNS is one that many nurses progress to a few years after registering, so they are usually experienced Registered Nurses with a wealth of foundational and specialist experience in care. However, the role of the CNS is highly varied and the job title and expectations can be inconsistent, (Griffiths, Peter, Simon, Michael, Richardson, Alison and Corner, Jessica (2013)). The CNS role includes treating, supporting and managing people with cancer, and promoting health and wellbeing. The Taskforce Strategy recommends that by 2020 all patients have access to a cancer CNS or other key worker. However, whilst clearly a positive development, there are a number of issues we need to tackle to support Cancer Alliances and Trusts as they expand this service for patients:

There is no nationally agreed competency and skills framework for CNSs.

- The role was created when cancer was largely an acute condition and now needs to be updated to reflect the changing nature of the disease where having a key contact point for a multiple of professions over different sites and for a longer period of time has been associated with improved outcomes and patient experience. The CNS role originally grew from a historic service model when patients generally had a very clear and short journey through treatment to either cure or end of life care. Cancer now has a longer course which may be more erratic combined with other conditions making care more complex, with intensive treatment at different stages or over a longer period, with more complex treatment based on personalised medicine as the application of genomics grows.
- Macmillan Cancer Support will be developing and testing an approach to better understand the skills required by the nursing and support workforce to meet the holistic needs of people with cancer. HEE are exploring with Macmillan how they can support this work and any learning from this will inform the development of structured career and competency frameworks.
- HEE will work with the Royal College of Nursing (RCN), Cancer Alliances, Charities, Nursing and Midwifery Council and other ALBs, building on existing competency frameworks and using any learning from the Macmillan Specialist Adult Cancer Nurse Census 2017 and agree the existing competences required of CNSs.

There is no defined route for a nurse to become a CNS

- HEE with partners will identify and develop clear career pathways into the CNS role as part of a wider review of the contribution nurses can make to cancer. This will draw on any relevant findings from Macmillan's review of the skills required to care for people with cancer and build on existing work around career pathways. It will read across to the work HEE is leading on Nursing Associates, Apprenticeships and Advanced Clinical Practice
- In the short term HEE with Macmillan Cancer Support has provided 150 staff through Cancer Alliances with access to the 'Macmillan Explore' programme during 2017/18. ('Macmillan Explore' is a role development programme to support staff with an interest in specialist cancer practice. Aimed at nurses and AHPs working at bands 5-7, the e-learning programme takes applicants through six modules and the programme includes telephone mentoring and opportunities for peer networking. The programme has received significant interest demonstrating high demand for this level of programme.)

The CNS role has expanded and many report having insufficient time to utilise their specialist skills due to administrative burdens and general nursing work.

- NHS England will be piloting new ways of working following a consultation process with people affected by cancer, Cancer Clinical Nurse Specialists, Cancer Charities and Provider organisations and will continue to test the use of different roles such as support works and care navigators with Cancer Aliiances
- NHS Improvement will encourage Trusts to invest in new roles such as support workers/ patient navigators, so that more patients can have a key worker with the appropriate skills and competences and we make best use of specialist skills of CNS.

The numbers of CNSs varies among locations and tumour groups. For example, there is a significantly higher vacancy rate in London compared to the overall England rate; there is a higher ratio of patients to nurses in urological cancer.

- The Macmillan Specialist Adult Cancer Nurse 2017 Census Report will be used to determine any variation and actions required to address these. Combined with any learning from NHSI work, HEE will work with Cancer Alliances to understand the distribution of CNSs and encourage greater equity of access to a key worker.

NHSI will continue to support Trusts to recruit and retain nurses as part of their wider retention strategy. HEE will continue to encourage nurses to come back to the profession as part of its national RTP programme and linked to the Image of Nursing campaign. We will continue to encourage universities to expand the number of training places to reflect the forecast increases in activity in cancer.

In addition to the seven priority professions detailed in this report, the Cancer Taskforce Report also highlighted the further key areas of the workforce of Allied Health Professionals (AHPs), sonographers and healthcare scientists. These areas of the workforce are discussed below.

Allied Health Professionals (AHPs)

AHPs are a diverse group of clinical practitioners who contribute to the prevention, diagnosis, treatment, rehabilitation and care of people affected by cancer. AHPs work alongside other health care professionals in multidisciplinary teams. In addition to diagnostic and therapy radiographers, considered above, there are 13 other AHPs.

Bringing in AHP skills early on (pre-treatment/at diagnosis) can have dramatic impacts on patient outcomes as well as resource use. AHPs into Action identified how AHPs can deliver increased capacity by establishing new streamlined patient pathways that deliver earlier diagnosis, improved survival and better quality of life for people affected by cancer.

Increasingly, approaches require a 'step change' in thinking away from a traditional medical model approach, and towards a more 'rehabilitative' and personalised way of delivering care that supports people to be more independent and self-manage their health status.

Transforming the care and support of people affected by cancer will also require new models of service provision – delivering complex care packages through better interagency and partnership working across professions and across care settings. As cancer is increasingly recognised as a long-term condition (in those cases where it is not cured), social care and the voluntary and community sector will play an important role in such service innovation.

- HEE will work with partners and use findings from Macmillan Cancer Support's AHP workforce survey to help us better understand the contribution of AHPs to supporting people living with cancer. A key challenge will be to identify where there are variations in cancer service provision across professions and across geographies and identify opportunities for increasing numbers and/or upskilling to close any gaps.
- HEE has published its ACP framework (November 2017), to be followed by an implementation toolkit (Spring 2018). In addition, HEE is supporting an employer trailblazer group to develop a Level 7 apprenticeship standard for ACPs. This work will support the AHP workforce to develop the higher level competences required to implement new models of care for people affected by cancer.

- We will work with partners to develop support for career development opportunities and enhance the skills of existing AHPs who come into contact with people affected by cancer. Using the recently published [Macmillan Cancer Support AHP Competence Framework](#) we will support experienced AHP 'champions' to identify and develop the skills, knowledge and behaviours required to take up Advanced, Specialist and Consultant practitioner and/or leadership and management roles in cancer care. By supporting AHPs to demonstrate and deliver the impact of local service improvement and innovation projects this will assist NHS employers to transform the way they deliver cancer care to an increased number of people being diagnosed with, and surviving cancer.
- At strategic level, NHS England will continue to work with the National Cancer Vanguard and first wave Cancer Alliances, who have already undertaken a significant amount of preliminary service transformation work, to develop tools and resources and to share good practice on cancer rehabilitation.

Sonographers

Background

Sonography uses high frequency (ultra)sound to generate clinical images. Sonographers perform, interpret and report a wide range of ultrasound examinations that can be used in diagnosis, monitoring and (image-guided) treatment, including but not exclusive to, cancer. The discipline overlaps with Clinical Radiology and Diagnostic Radiography but in response to the ever-increasing demand for, and scope of ultrasound imaging, sonography has evolved into a recognisable 'profession', although it is not yet regulated as a separate profession. Ultrasound examinations are also performed by a wide range of other health professionals including, for example midwives (obstetric ultrasound), nurses (gynaecology ultrasound), physiotherapists (musculoskeletal ultrasound), clinical scientists (heart and vascular ultrasound).

Analysis

The Diagnostic Imaging Dataset (DID) data shows that the number of NHS diagnostic ultrasonography imaging events increase year on year, while overall ultrasound activity is increasing, the rate of increase appears to be slowing but the length of wait is increasing. This indicates that the service is not coping as efficiently as previously.

Expanding this profession to meet forecasted increases in demand is challenging because:

- there is no reliable ultrasound practitioner specific workforce data as sonography is not currently a regulated profession and is not separately identifiable in ESR
- there are multiple staff groups involved in ultrasound service provision
- organisations do not tend to collect data on ultrasound specific activity giving a lack of data detailing ultrasound activity by specialty/profession/staff group
- historically there has been no 'direct entry' into training for this role, the main routes being entry from other registered professions, such as radiography or midwifery), followed by postgraduate or post registration training in sonography.

HEE work to date has included:

- Mapping the currently available training curricula of the radiography and sonography professions to identify commonalities and differences (December 2017)

- Developing career and competence frameworks for radiography, breast imaging and sonography, and updating the associated national occupational standards
- A stakeholder sonography task and finish group was established to develop a sustainable future for sonography. It reported in November and recommends:
 - Widening (direct) access to sonography training by defining the scope of practice of a graduate sonographer and supporting the development of under graduate entry and a degree level apprenticeship standard in sonography
 - Identifying innovative solutions that will increase training capacity
 - Progressing the case for statutory regulation of sonography as a stand-alone profession.

Healthcare Scientists (HCS)

HCS is a broad term encompassing a highly diverse, highly specialist scientific workforce. The aim of this workforce is to improve the health and well-being of patients and the public through the application of scientific principles and the development and use of technology to develop a broad range of NHS services. HCS falls into four broad divisions, with 60+ individual specialisms: Life sciences, Physical Sciences and Biomedical Engineering, Physiological Sciences, Bioinformatics.

HCSs play a vital and cross cutting role in most patient diagnosis and treatment pathways, especially cancer, across the NHS. Even when considered as a whole, the workforce numbers for this group remain small, but crucial. They represent just 5% of the workforce (55,000 across the UK, but 80% of diagnosis and treatment services are reliant on their skills and services).

Education and training pathways run from support workers to consultant clinical scientists and include the technological focused practitioner workforce inclusive of biomedical scientists. These are different to Clinical Scientists who undergo a 3 year postgraduate STP (Scientist Training Programmes) followed by a 5 year HSST (Higher Specialist Training Programme) commissioned through the HEE National School of Health Care Science.

As the practise of cancer medicine becomes increasingly rooted in science and complex bioinformatics (big data) analysis and interpretation, the NHS will need to build capacity and capability in its scientific workforce. Consultant clinical scientists already successfully lead many large clinical diagnostic services including genetics, immunology, haematology, biochemistry, medical physics. In all these specialties, medical staff have time to devote to clinical cases and scientific advances and interpretation are lead and managed by clinical scientists. For the new Cancer workforce to deliver necessary complex scientific diagnostics and therapeutics, it will be vital to expand the numbers of consultant clinical scientists. Through STP and Higher Specialist Scientist Training (HSST) programmes, which through STP and HSST programmes can be delivered within 8-9 years.

The 100,000 Genomes Project is a key driver in the transformation of the experience of cancer patients and their diagnoses (establishing new tissue sample handling and genomic friendly analysis pathways) . For example, the requirement for high quality whole genome sequencing from a patient's tumour has necessitated the introduction of fresh – frozen tissue processes in addition to or sometimes replacing the standard formalin fixation of tissue following biopsy or resection. NHS England's strategy for the procurement of the NHS genomic laboratory

infrastructure molecular cancer investigations heralds a requirement for new ways of working which includes the development of new roles for many NHS professionals involved in the diagnosis, treatment and management of patients with either common or rare inherited cancers. Further Clinical Scientists in Genomic Counselling can take on independent caseloads especially in the interpretation and return of results enabling clinical colleagues to deal with more complex presentations.

Working closely with the NSHCS, the HEE Genomics Education Programme has played a key role in the development of a comprehensive suite of Genomic education and training options for Clinical Scientists. It is now possible for clinical scientists to undertake an STP in Genomics (mainly covering inherited diseases); Genomic Counselling and Cancer Genomics (from 2018). HSST programmes are currently available for Genomics, and Molecular Pathology of Acquired Disease. In addition, Bioinformatics (Genomics) was established as a new speciality and is available as both STP and HSST.

Upskilling the current workforce

- Through the HEE Commissioned Masters in Genomic Medicine Framework, HEE is upskilling the current workforce to support the transformation of genomics and diagnostic cancer services through opportunities to study at Master, Diploma or Certificate level or individual CPD modules such as Cancer and Counselling skills.
- HEE will roll out the online open access training courses developed for the wider workforce, including gaining consent and ethics, understanding whole genome sequencing, tumour assessment and films to raise awareness amongst different professional groups are in production with more on the way.

Expanding the future workforce

We will carry out more detailed analysis on the scientific workforce following the NHS England led redesign of the NHS Genomic Medicine Service to ensure we have sufficient staff with the right skills to deliver access to cancer genomic analysis, the stratification of treatments and clinical trials supporting emerging technologies such as Proton Beam Therapy and radiotherapy expansion in a sustainable and equitable way. This will form a key part of our longer-term strategy. Meanwhile, HEE will take action now to deliver a 25% growth in the number of trainees starting the STP programmes across key scientific specialisms including Genomics, Bioinformatics Genomic Counselling, Haematology, Medical physics and the new Cancer Genomics STP. This will yield dividends by 2021 as the first cohorts complete the three-year STP training programme.

The informal workforce

When we talk about ‘the workforce’ we are usually referring to the formal, paid workforce. But in addition to people employed by the NHS and other organisations, there is an army of individuals caring for themselves and each other. As society changes, the line between professionals and patients may become more blurred for some conditions and some people at particular times.

- In 2016, 51% of all adults had used the Internet to find health information online and among those aged 25 to 34 the rate of use increased to nearly 70%. The largest increases in recent internet use have been seen in the older age groups, particularly for women aged over 75, where there has been a 169% increase since 2011.
- 47 million health apps have been created in just five years.
- It has been estimated that there are currently 6m carers in the UK and that this is set to rise to 9.4m. 1.4m people care for someone with cancer.
- There are 3m volunteers working in health.
- Cancer is increasingly becoming a long term condition. If a person with a long-term condition sees health professionals for a total of two hours in any one year, it leaves a total of 8,758 hours where they are managing their own care.

In our *Framework 15*, HEE argued that we should increasingly think of patients as ‘members of a community of health’, where qualified and/or paid staff maybe one of, rather than the sole source of, advice and support. We know from studies that helping people to help themselves may lead to fewer crises and inpatient admissions for some conditions, whilst others have estimated that for every £100 spent on encouraging self care, around £150 worth of benefits could be delivered in return.

We also know that we are not doing enough to support carers to help their family and friends: 79% of carers experience anxiety, 56% suffer depression, and a survey of cancer carers revealed that 38% perform healthcare tasks such as infection control and changing dressings. A 2015 study found that 45% of carers were performing healthcare tasks without any information or training.

HEE will work with our partners to develop a strategy to support individual patients and their carers to manage their own and others health where appropriate. This could include, for example, commissioning education and training programmes for patients and their carers to ensure they have the right skills and support. This review will focus initially on mental health and cancer, so that we can develop a plan for the ‘informal’ workforce alongside the national plans we have for the paid, formal workforce in these priority areas. It will report by summer 2018 so that it can inform the investment and planning decisions made in the operational and investment plans for 19/20.

- To support our staff to have the skills to provide co-productive care as part of a wider community of health where appropriate, we will work with our partners to explore how education and training curricula and experience can provide the necessary skills, values and behaviours.

Communication skills training

Health care workers are generally good at communicating. The national Cancer Patient Experience Survey (CPES) (Quality Health 2016) in relation to opportunity for communication, imparting information and ensuring understanding, highlights that when asked how they felt about the way they were told they had cancer, 84% of respondents said that it was done sensitively; and 88% of respondents said that, when they had had important questions to ask their CNS, they had got answers they could understand all or most of the time. But 73% of respondents said that they completely understood the explanation of what was wrong

with them; and 72% of respondents said that the possible side effects of treatment(s) were definitely explained to them in a way they could understand (which meant that over a quarter didn't completely understand).

However, when things go wrong, communication is often cited as the cause, Marie Curie's 'A long and winding road' provides us with some of the evidence to support this. There is a wealth of communication skills training available, but although the NHS often develops the content, others roll out the training so that NHS employers end up paying to access that content.

In the short term, HEE will produce a best practice resource guide in March 2018 identifying best practice in communication skills and bring it together in one place.

Communication skills training is included in all curricula but how it is taught, the length of teaching and content vary considerably *so in the longer term HEE* will work with the regulators to focus on the delivery of training, the experiential elements and what good looks like in terms of delivery. We will also work with the regulators and other Arms Length Bodies to ascertain the feasibility and desirability of encouraging annual update training in communication skills given the need to align levers to achieve this.

6. Implementation

HEE will lead the workforce planning process for cancer at a national and local level and 'hold the ring' on delivery, although it does not hold all of the levers. Building on the governance model developed for the delivery of the Mental Health Workforce Plan for England, HEE will work closely with other ALBs to provide local, regional and national support to ensure we have the workforce to deliver the commitments set out in the Cancer Taskforce.

- *Each local office of HEE Local Workforce Action Board (LWAB) will work with their local Cancer Alliance to understand where they are now and where they need to be by 2021, producing a robust workforce plan to deliver a) their local strategies to improve early diagnosis and living with and beyond cancer and b) increase net supply of the professions highlighted within this report to deliver FYFV objectives whilst reflecting regional variations in demand and supply and c) align with and help deliver their STP.*
- *HEE Regional Directors will assure themselves that the plans will secure genuine improvements in services through a net increase in capacity and skills, rather than just narrowly focussing on the numeric ambitions set out in this report, working closely with other ALBs and clinical leaders.*
- *Workforce plans to be submitted as part of and aligned to operational and STP Plans by March 2018 (unless otherwise agreed). To support this process, HEE will share regional data and host a national peer-learning event in January 2018 between Cancer Alliances and local HEE teams.*
- *NHSI and NHSE Regional Directors will work closely with HEE RDs to ensure action is taken and support provided across the system to deliver all aspects of the plan, and that it is monitored and progressed through the Regional Cancer Delivery Board.*
- *HEE national team to work with PHE and NHSE to continue detailed workforce planning to deliver national screening programmes such as FIT and ensure alignment with our national Workforce Strategy currently out for consultation and due to be published summer 2018.*
- *Each ALB to account for progress and flag whether further action/support is required at the National Cancer Transformation Board, chaired by Cally Palmer and attended by national directors from each ALB.*

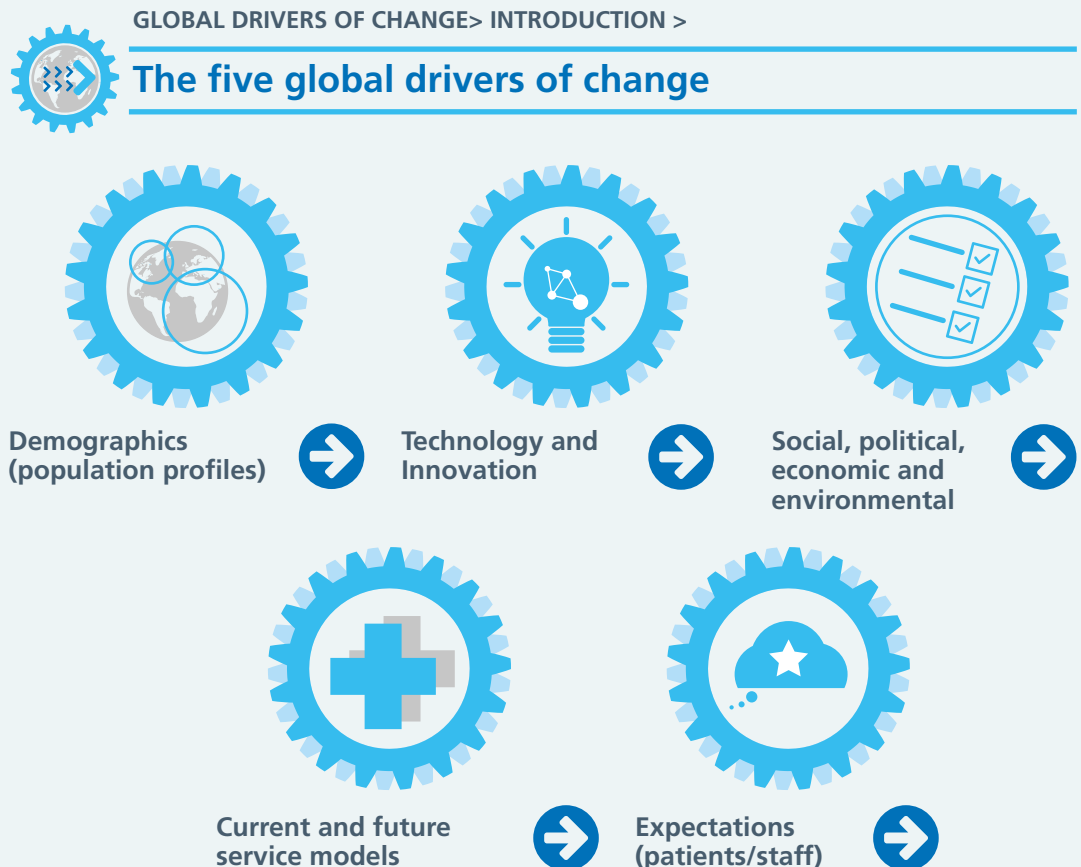
Cancer Staff Forum

This report highlights some common themes and issues that will need to be tackled if we are to keep and attract staff back to the NHS, including redressing work/life balance, providing opportunities for continual professional development, avoiding burn out and tackling pay and other rewards, as well as streamlining and/or removing obstacles that can get in the way of providing quality patient care. Building upon *Shape of Training* and other ongoing workstreams, HEE will establish a cross-system forum to look at these issues through the lens of the seven professions for cancer. This will establish a cross system forum to look at the parties who hold the levers to make working and remaining in the NHS more attractive, including employers, the DH, Royal Colleges and Regulators. We will not duplicate or supersede existing work but seek solutions by focussing initially on the seven priority professions considered in our cancer plan. It will draw on HEE's national Return to Practice campaigns and benefit from our newly created Global Learning programme, and NHS Improvement retention programme. The DH will continue its work on pensions across the wider medical professions with system partners.

7. What we will do to address the workforce challenges beyond 2021

The Cancer Workforce Plan necessarily focusses on immediate steps to secure and increase supply in some key areas to ensure delivery of the FYFV objectives by 2021. Our ability to understand and respond to cancer is continually changing, therefore this plan will be followed by a longer-term strategy that looks at the workforce needs beyond 2021. It will take the forecast needs of future patients as its starting point, build upon HEE's *Framework 15* and be published in the summer of 2018.

In our Strategic Framework 15 (published in 2014) we identified five key drivers of change:



As part of phase 2, we are making a **call for evidence** from all interested parties on the five drivers of change and how they are likely to impact on the forecast demand for health care in cancer over the next fifteen years, enable us to consider the likely workforce implications against a consistent set of planning assumptions. Written evidence should be submitted to cancerstrategy@hee.nhs.uk by Friday **January 26th 2018** for discussion at a one-day seminar in February.

Appendices

Table 1. Percentage of Medical Specialists by consultant/trainee/NTNC by region who received a medical degree outside of the UK

Medical Specialism		England total	Region			
			LaSE	Midlands and East	North	South
Clinical Oncology	Consultant	24%	17%	32%	25%	19%
	Trainee	24%	19%	23%	31%	22%
	NTNC	66%	73%	76%	65%	54%
Clinical Radiology	Consultant	31%	29%	38%	36%	16%
	Trainee	25%	16%	33%	33%	15%
	NTNC	69%	80%	63%	60%	48%
Gastroenterology	Consultant	27%	22%	29%	35%	16%
	Trainee	28%	19%	36%	34%	19%
	NTNC	75%	71%	83%	77%	69%
Haematology	Consultant	33%	32%	42%	34%	23%
	Trainee	27%	24%	23%	35%	26%
	NTNC	70%	72%	74%	69%	61%
Histopathology	Consultant	50%	56%	52%	49%	41%
	Trainee	34%	31%	37%	37%	25%
	NTNC	72%	79%	65%	63%	73%
Medical Oncology	Consultant	22%	16%	30%	26%	16%
	Trainee	22%	16%	33%	34%	20%
	NTNC	68%	69%	77%	65%	55%

Source: HEE analysis of ESR March 20

Key indicators for actions required to increase supply in core cancer medical specialties

Table 2: Key workforce indicators for core cancer Medical Specialties

Medical Specialty	Fill rate (2017)	Non UK qualified consultant in 2017	Vacancies at 2016		Total leavers (Average annual rate 2016-2021)	Total joiners (Average annual rate 2016-2021)	Annual growth (Average 2016-2021)	2021 Staff in post (forecast)
	(%)	(%)	(WTE)	(%)	(%)	(%)	(%)	(% Growth)
Histopathology	↓ 71.8%	52%	127	10%	6%	6%	-0.7%	↑ -3%
Gastroenterology	↑ 97%	29%	143	12%	4%	8%	5%	→ 23%
Clinical Radiology	↑ 100%	33%	304	10%	5%	8%	3%	↑ 13%
Clinical and Medical Oncology Combined	→ 85.6%	27%	84	7%	5%	8%	3%	↑ 16%
Average all cancer specialties	↑ 94%	34%		9%	5%	8%	3%	15%
All NHS medical specialties				9%				13%

Source: ESR, HEE Medical model, PGME, 2016/17.

Table 3: Key workforce indicators for action for Diagnostic and Therapeutic Radiography and Adult Nursing

Clinical Profession	Fill rate (2017)	Current vacancies (2016)		Total leavers (Average annual rate 2016-2021)	Annual growth (Average 2016-2021)	2021 Staff in post (forecast)
	(%)	(WTE)	(%)	(%)	(%)	(% Growth)
Diagnostic Radiography	103%	1,426	9%	7%	2%	11%
Therapeutic Radiography	99%	45	2%	7%	3%	17%
Adult Nursing	100%	24,011	10%	8%	2%	10%
All NHS Allied Health Professionals	98%	5,802	5%	9%	3%	13%

Source: HEE Non-Medical model 2016/17

Example: AHPs into Action Case study 32 showcases diagnostic radiographer reporting

At Homerton University Hospital, London, the contribution of (non-medical) radiographers to image interpretation and reporting has been expanded to help overcome a substantial reporting backlog caused by a chronic shortage of (medical) radiologists and sustained increases in imaging workload. Diagnostic capacity is frequently cited as a barrier to improved patient outcomes and streamlined patient pathways, and a limiter of ambitious plans for cancer diagnosis. The radiographer reporting initiative at Homerton hospital increased the number of examinations that received an immediate report during normal working hours, improved patient flow and reduced patient recall. Expansion of the role of reporting radiographers (and sonographers), to include deputising for radiologists at MDT meetings, has contributed to a reduction in need for 6 consultant radiology posts (2015-16). www.england.nhs.uk/wp-content/uploads/2017/01/ahp-action-transform-hlth.pdf p.93-94

AHPs into Action Case Study 37 showcases therapy radiographer led prostate cancer treatment review.

The advanced roles of radiographers specialising in prostate cancer at a large cancer centre in the north of England have evolved in part due to working time directive initiatives for doctors limiting their hours of work. Combined with growing caseloads from high incidences of cancer and shortages of consultant clinical oncologists, it was deemed essential to advance the traditional roles of radiographers. Practices have developed to include brachytherapy volume studies, consenting patients, reviewing patients during their radiation pathway and independent prescribing. These practices have allowed radiographers to ensure efficient services for patients by cutting waiting lists, increasing support for patients and the clinical team, as well as giving radiographers enhanced professional satisfaction

Being able to support patients using a holistic approach through their entire pathway is extremely rewarding. In the future, these roles are likely to expand as newer technologies within radiation delivery specialise even further. For example, brachytherapy delivered as monotherapy will increase the case load of patients and will require expert knowledge. We are also likely to see an increase in radiotherapy patients due to the new research findings from the STAMPEDE trial suggesting radiotherapy to the primary prostate cancer, even in metastatic patients, is likely to be beneficial.

www.sor.org/sites/default/files/document-versions/appg_a4.pdf

