**Template: Radiotherapy workforce strategy 2023-2033**

**Author(s):** [insert name(s)]

**Scope of strategy:** [insert name of ODN/geographical area and cancer centres]

**Date:**

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| **Notes** |
| 1. The Radiotherapy Board provides guidance, oversight and support for the continuing development of high-quality radiotherapy services for cancer patients in the UK. Established in 2013 by [The Royal College of Radiologists](http://www.rcr.ac.uk/) (RCR), the [Society and College of Radiographers](http://www.sor.org) (SCoR), and the [Institute of Physics and Engineering in Medicine](http://www.ipem.ac.uk) (IPEM), it has representation from across the four UK nations and from other organisations closely involved in radiotherapy services.   One of the Radiotherapy Board's priorities is to ensure a trained, skilled and flexible, multidisciplinary radiotherapy workforce for the future. This workforce strategy template focuses on therapeutic radiographers, the radiotherapy physics workforce, and clinical oncologists, reflecting the Board's composition, though anyone adopting this template in part or in full is welcome to consider the other professional groups and workforce areas who play such an important role in service delivery, such as nursing, healthcare assistants, dieticians, speech and language therapists and psychological therapists, as well as administrative, clerical and other professional services staff.   1. This strategy template has been produced by the Radiotherapy Board to support Operational Delivery Networks (ODNs) and devolved nations in developing their own regional radiotherapy workforce strategies. The language is designed to explain the problems and solutions to your Trusts, Integrated Care Boards (ICBs), Cancer Alliances and commissioners. It is a template and should be used in whatever way is most useful to each ODN: you may wish to remove some of the detail contained in this document, and equally may have alternative points you wish to include. Please use and adapt the text as you see fit. It is hoped that colleagues outside of England will also find the content applicable to their own workforce planning and development activities. 2. The strategy should cover the following professional groups:  * Clinical Oncologists:   + Consultants   + SAS Doctors   + Specialty Trainee doctors * Therapeutic radiographers:   + Therapeutic radiographers (all bands)   + Assistant Practitioners (Agenda for Change (AfC) band 4)   + Support roles at AfC bands 2 and 3 * Radiotherapy physics:   + Clinical scientists   + Clinical technologists (engineering)   + Clinical technologists (physics)   + Dosimetrists  1. The following data sources may support your case:  * [College of Radiographers](https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/reports-and-surveys/radiotherapy-radiographic-workforce-uk-census-2021) (CoR), [Institute for Physics and Engineering in Medicine](https://www.ipem.ac.uk/media/o2sksjdy/2021-radiotherapy-workforce-census-summary-report.pdf?ver=2021-12-09-142704-707) (IPEM) and [The Royal College of Radiologists](https://www.rcr.ac.uk/clinical-oncology/rcr-clinical-oncology-census-report-2021) (RCR) workforce censuses. *Where data is quoted from the workforce censuses of each organisation, the data most recently available at the time of writing in July 2023 was used.* * WPI Economics (2021). [Understanding the impacts of investing in training for clinical radiology and clinical oncology](http://wpieconomics.com/site/wp-content/uploads/2021/10/WPI-Economics-RCR-Final-report-Oct-21.pdf). *Note*: *this report uses data from the 2020 RCR workforce census*. * General Medical Council [workforce report 2022](https://www.gmc-uk.org/about/what-we-do-and-why/data-and-research/the-state-of-medical-education-and-practice-in-the-uk/workforce-report-2022). * [National Radiotherapy Dataset](https://www.cancerdata.nhs.uk/radiotherapy). * [Macmillan Cancer Support research](https://www.macmillan.org.uk/about-us/what-we-do/research) on cancer experience, cancer prevalence and the cancer workforce. * [Office for National Statistics](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare), including local authority [ageing statistics](https://www.ons.gov.uk/help/localstatistics).  1. The sections below cover the following, and a full table of contents is included on the following page:  * Executive summary * Background and national picture (including the context for service delivery and cancer treatment, roles and training routes, and a workforce overview) * Current workforce establishment * Retirement and attrition forecast * Future workforce supply * Future demand for radiotherapy * Recommended workforce targets and plan * Other immediate workforce support measures * Funding sources and risks   Each section comprises a subsection focusing on the national picture (which you should adopt or adapt as you see fit), and a subsection (in yellow) for you to complete with reference to your ODN/regional context.   1. Once you have written a draft strategy, please feel free to send it to [radiotherapyboard@rcr.ac.uk](mailto:radiotherapyboard@rcr.ac.uk) and we will happily review it and provide feedback. |

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| Executive summary |
| Present your summary of the key areas covered in the main body of the strategy document:   * Current workforce shortfall * Increasing service demand * Risks * Solutions |

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| Background and national picture |
| A. National contextService delivery and cancer treatment There are 60 cancer centres across the UK delivering radiotherapy services, including external beam radiotherapy, stereotactic ablative radiotherapy (SABR), brachytherapy, molecular radiotherapy, and proton beam therapy, as well as systemic anti-cancer treatment (SACT). Successful leadership and delivery of these services relies upon effective collaborative working across services, ODNs and ICBs between clinical and medical oncologists, therapeutic radiographers, and the physics workforce, amongst others. Together, the multidisciplinary teams delivering radiotherapy provide a high quality, safe service that keeps more people alive, reducing their toxicity and helping them live well for longer.  40-50% of all cancer patients need radiotherapy as part of their treatment. In England this means over 130,000 people have radiotherapy in each year. Radiotherapy is often given in multiple fractions over several weeks, equating to over 1.5 million visits for treatment. Many of these treatments are to provide cure for early-stage cancers. In comparison with cancer drugs and other treatments, radiotherapy is relatively cheap. It is estimated that total cost of radiotherapy in England in 2019 was [£440m](https://www.england.nhs.uk/wp-content/uploads/2019/12/Radiotherapy-Learning-Healthcare-System.pdf).  Technological advances are improving radiotherapy year on year. In particular, we are now able to target tumours more accurately so that radiotherapy can be given in fewer doses and with fewer short- and long-term side effects. These technological advances need meticulous quality assurance to make sure they are safe.  There is an extremely strong quality and safety culture in radiotherapy including a [national incident reporting system](https://www.ukhsa-protectionservices.org.uk/meg/radiotherapy/safer_RT/), which means errors in treatment delivery are very rare. [Prospective peer review of radiotherapy contours](https://www.rcr.ac.uk/publication/radiotherapy-target-volume-definition-and-peer-review-second-edition-rcr-guidance) should be standard for many tumour types and clinical oncologists must have time in their job plans for this. Much of this work is unseen – treatment plans being checked by radiographers, dosimetrists and physicists, essential machine quality assurance being performed both inside (removing patient linac capacity) and outside treatment hours by physicists and engineers. This QA is even more important with the move to higher dose over fewer treatments per patient, as any error would have a greater proportional effect than if spread over a longer treatment course. As a result, newer treatments can take longer to deliver and the previous targets for numbers of treatments by machine in a year are [no longer thought to be applicable](https://www.ipem.ac.uk/media/0nbffcm3/position-statement-on-9000-attendances-per-linac-final.pdf). Most departments are running at or close to capacity which means any variation in patient referral numbers can lead to increased waiting times. That capacity can be linked to staff numbers and machine availability. Big data, machine learning and artificial intelligence (AI) are improving our ability to give safe and effective treatments, but these technologies also need significant staff input to make sure they are employed effectively.  Cancer incidence continues to rise at 3% per annum. Better screening and diagnostic techniques are increasing the proportion of patients diagnosed with early-stage disease and many of them will require radiotherapy. Because treatment is more successful, there are more people living with cancer who will need radiotherapy in later years. We also know that [waiting to start radiotherapy is detrimental to cure rates](https://www.bmj.com/content/371/bmj.m4087) – with a one month wait to start treatment equating to a 10% reduction in survival for some cancer types. We must therefore aim to start treatment as soon as possible whilst not compromising on quality and accuracy. Most departments are running at or close to capacity which means any variation in patient referral numbers can lead to increased waiting times and can impair ability to compensate for missed treatments when machines break down.  Adequate radiotherapy capacity is made up of equipment and staff. Investment in the multidisciplinary team to ensure that we treat the right patients as safely, effectively and quickly as possible is absolutely key to a good service.   |  | | --- | | Investing in your radiotherapy workforce will therefore mean:   * Improved cure rates for cancer patients; * Better compliance with cancer waiting times targets including the proposed 17d referral to treatment target; * Better patient experience, e.g. by enabling shorter courses of treatment and reducing waiting times; * Better implementation of new technologies to improve quality and safety; and * A service that can cope better with expected increases in future demand for radiotherapy. |  Roles and training routes Clinical oncologists (CO) have a five-year specialty training (ST) programme, and are trained to provide both radiotherapy and SACT. Medical oncologists (MO) have a four-year ST programme often complemented by research time (MD or PhD) and provide SACT but not radiotherapy. CO and MO also provide large amounts of supportive care to patients who have completed curative treatment, or with incurable cancers and both contribute to [acute oncology services](https://www.rcr.ac.uk/sites/default/files/acute-oncology-increasing-engagement-and-visibility-in-acute-care-settings.pdf) (AOS), often with a strong focus on admission avoidance and reducing the length of hospital stays where admission is required. The median length of training for clinical oncology is six and a half years. ST3 posts starting in 2023 are likely to become consultants in 2029-30.  Therapeutic radiographers are extensively involved at all stages of the patient’s radiotherapy journey. They are the only healthcare professionals qualified to plan and deliver accurate radiotherapy treatments using a wide range of sophisticated and technical equipment. They also have unique expertise and skills required to care for patients before, during and after radiotherapy. Clinical expertise, leadership and management, education, and research and development are embedded at each level of practice and within each role, from registration as a Practitioner, through to Enhanced, Advanced and Consultant practitioners. They typically undertake a three-year undergraduate programme, though accelerated pre-registration postgraduate programmes are available for those who already hold a first degree. Degree Apprenticeships in therapeutic radiography are also available in some centres. These require additional salary costs for the duration of the apprenticeship, and a commitment to release apprentices for ‘off the job training’. Those commencing an undergraduate programme in 2023 are likely to become registered therapeutic radiographers in 2026.  The radiotherapy physics workforce includes clinical scientists, clinical technologists, engineers and systems/IT support staff. Clinical scientists provide leadership on the development and implementation of new techniques, on the specification, procurement and acceptance testing of radiotherapy linear accelerators (linacs), other imaging equipment and treatment planning systems. They design and manage quality assurance and preventative maintenance programmes, and oversee and advise on radiation protection and safety. Clinical technologists can either be clinical engineers, who ensure that equipment uptime is maximised through maintenance and repair programmes; or dosimetrists, who plan individual patients’ radiotherapy using complex algorithms. Dosimetrist roles can be fulfilled by both those trained as therapeutic radiographers or as clinical technologists.  The radiotherapy physics workforce can also include computer scientists and IT support staff. The scientific computing staff are vital in implementing new technology in a timely manner and maintaining the performance of current systems. As radiotherapy advances into the AI and adaptive world, the need for staff with these skills will increase.  All three professional groups play an essential role in educating the radiotherapy workforce of the future, and in promoting and engaging in research to improve cancer care. Expansion of the radiotherapy workforce allows all staff to develop their expertise in new innovative treatments, further expanding the provision of radiotherapy and improving outcomes for patients. Workforce overview The professional associations representing clinical oncologists (The Royal College of Radiologists, RCR), therapeutic radiographers (Society and College of Radiographers) and the physics workforce (Institute for Physics and Engineering in Medicine) each undertake an annual workforce census to provide national data. In each case, the workforce censuses highlight significant current workforce shortfalls, and a need to both attract new entrants to the workforce and retain those we already have. Key national initiatives include:   * The development of apprenticeships in the radiotherapeutic and physics workforce areas, across a variety of roles, grades and academic levels, to build a locally-committed workforce that is more likely to be retained over time, ideally through the creation of supernumerary apprenticeship posts. * An expansion in training places, particularly through apprenticeships, though variation in funding of additional training places across the professions and lack of capacity to support clinical education are key barriers. * National profile-raising campaigns to encourage more people to consider careers in cancer care. * Exploration of global recruitment and learn-earn-return initiatives. * Development of Specialist posts for CO and MO to provide development opportunities for specialty and associate specialist grade doctors who do not pursue consultant roles. * Development of Advanced Practice and Consultant roles in the therapeutic radiographer and radiotherapy physics workforce. * Focus on creating a culture of care and effective multidisciplinary team working.   Many radiotherapy roles can be undertaken by professionals from different groups (e.g. contouring, plan production). Effective use of [skill mix](https://www.cancerresearchuk.org/sites/default/files/full_team_ahead-full_report.pdf) ensures members of the radiotherapy team perform roles according to competency rather than job title. This also enables staff to work near the top of their licence so that expertise is used effectively. Consideration of future skill mix and the roles that will need filling in the future for each professional group is key to developing a resilient workforce plan. As more staff work at the top of their licence, additional staff will be required to backfill their operational responsibilities. Collaborative working around budgets will be essential to delivering this.  Each service will identify their own individual need for the skill mix required to deliver the service. In line with this identification of the level of practice required to deliver that service should be considered. The College of Radiographers [Education and Career Framework](https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/education-and-career-framework-fourth) 4th edition, although written for the profession, clearly shows the different levels of autonomy and decision making at each level of practice.  The differences in level are identified below.    [*A workforce modelling project for Health Education England. (2019)*](https://www.lscthub.co.uk/wp-content/uploads/2021/10/Enhanced-PracticeREPORTFINALWOAppx.pdf) |
| B. ODN context  * Illustrate this document with some local patient stories that make the patient experience of radiotherapy treatment clear to those who don’t work in a radiotherapy service. Patient examples will be the most powerful influence on decision-makers. * Explain how a new technique has been implemented for patient benefit or how you cannot implement something due to lack of staff. * Find out who is on the boards of the providers that are part of the ODN, get to know them, and invite them to see the department. Show them a linac, talk to them in situ about how effective radiotherapy is at treating cancer, enthuse about technology, and highlight what more the service could do with investment in staff and up-to-date machines. * Highlight any evidence you have of inequalities in service provision across your ODN. |

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| Current establishment |
| A. National establishment data  * In **Clinical Oncology**: * There are 1,078 Clinical Oncology consultants across the UK (988 WTE), and 77 Specialty, Associate Specialist and Specialist (SAS) doctors. * There are 3.8 CO consultants per 100,000 people aged over 50 (6 oncologists per 100,000 if Medical Oncology numbers are included). The RCR uses the 50+ age range as [90% of cancers present in the over 50s](https://www.cancerresearchuk.org/health-professional/cancer-statistics/incidence/age#heading-Zero). * 8% of the consultant workforce are locum staff. * In **Therapeutic Radiography:**    + The total NHS radiotherapy radiographic workforce is 3903 WTE.   + There are 3746.1 WTE therapeutic radiographers, 63.3 WTE assistant practitioners/trainee assistant practitioners (APs/TAPs) and 93.6 WTE clinical support workers. * In **Radiotherapy Physics:** * There are 950 WTE clinical scientists, 640 WTE clinical technologists (physics) and 350 WTE clinical technologists (engineering). * There are approximately 65 WTE ‘Other staff’ in Radiotherapy Physics, who include computer scientists, clinical pathway co-ordinators, administrative staff and quality managers. * Dosimetrists are made up of both clinical technologists and therapeutic radiographers, so it is not currently possible to provide exact numbers of dosimetrists in post. |
| B. ODN establishment data This section relies primarily on local data, and comparison to any relevant national benchmarks. Colleagues are encouraged to consider the following:   * What are your staffing levels in your ODN compared to the national data, taking account of ODN/department size? * What are your comparative levels within the ODN? Can/should you aim for all departments within the ODN to have a similar staffing level? * What is your annual financial spend on locum staff, and what that could be spent on instead? * Current skill mix – where are the gaps, and can your multidisciplinary team as it is currently established do what you need it to do? * What research posts currently exist in the department, and what research are they involved in? |

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| Retirement and attrition forecast |
| A. National retirement and attrition data  * In **Clinical Oncology**: * 184 whole time equivalent (WTE) consultants, or nearly one in five of the current CO workforce, are expected to retire within the next 5 years. * Over the next 10 years, 40% of the CO workforce are forecast to retire. * In 2022, 73% of those leaving the workforce were aged below 60 years compared to 53% in 2018. The median age of leavers was 54; this is slightly lower than the five-year average of 55 years. * 33% of COs are working less than full time contracts (LTFT), compared to 28% in 2018. This represents an 8% capacity loss. 31% of those aged between 55-59 are working LTFT. * In **Therapeutic Radiography:** * Within the next five years, it is anticipated that around 5% of therapeutic radiographers will retire. * In 2022, 45% of those who departed from the workforce chose to pursue careers outside of the health service, indicating a significant rise compared to the previous year’s data, where only 16% left for the same reason. * The highest turnover rates based on AfC bands are observed in Band 3, representing clinical support workers, and Band 5, encompassing therapeutic radiographers. The turnover rates for Band 3 and Band 5 are 17.4% and 20.2% respectively. * The vast majority of therapeutic radiographers are educated and trained by a traditional undergraduate programme. The numbers trained by region varies, so some services do not have access to newly qualified staff, many of whom choose to take up employment where they were trained or in centres with particular expertise (e.g. proton centres). * Student attrition from pre-registration therapeutic radiography degree programmes has always been relatively high when compared to other healthcare programmes. Student retention is improving but approximately one fifth of the cohorts do not complete their degree. * In **Radiotherapy Physics**: * 9% of clinical scientists and 20% of clinical technologists are expected to retire within the next 5 years. * In particular, 34% of linac engineers are expected to retire within the next five years. * Approximately 10% of Clinical Scientists leave the profession within five years of HCPC registration. |
| B. ODN retirement and attrition data This section relies primarily on local data, and comparison to any relevant national benchmarks. Colleagues are encouraged to consider the following:   * Outline proportion of current ODN staff approaching the average retirement age in the next five to ten years. * Consider the likely impact of an increase in less than full-time working on WTE over the next ten years. * Outline any current or planned initiatives across the ODN aimed at retaining those approaching retirement age in the workforce. * Outline expected attrition for reasons other than retirement (e.g. burnout and sickness absence/turnover rates). |

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| Future workforce supply |
| A. National context Investment in training the next generation of oncologists, therapeutic radiographers, and clinical scientists and technologists is a strategically sound approach that can increase service capacity in the short, medium *and* longer-term.  For clinical oncology, there is good data that specialty trainees settle in one place and take up consultant posts where they train. Investing now in training is a cost-effective strategy as a national [RCR report](http://wpieconomics.com/site/wp-content/uploads/2021/10/WPI-Economics-RCR-Final-report-Oct-21.pdf) has shown. Doctors of the future are likely to have more portfolio careers and to work LTFT so we need to be bold in our ambitions for absolute numbers. There have been substantial increases in funded CO training places in England since 2021-22. Trainees spend approximately 50% of their time giving service and 50% being trained, so employing more trainees will give an immediate increase in service capacity. There needs to be parallel investment in educational and training capacity provided by more senior staff so that trainees are trained well and will therefore be more likely to remain within an organisation in the future.  The main current challenge in CO is attracting enough early-career doctors to choose CO as a specialty. There are many national initiatives to address this but we know local informal mentorship is a key driver for many people to choose this as a career. Hospitals that can demonstrate investment in the CO workforce are therefore more likely to be able to attract more doctors into the specialty and, in turn, they are more likely to remain within the organisation. **I**nvestment in the workforce now will provide long-term solutions.Similarly, not investing now will mean local doctors either decide to train elsewhere or do not choose CO as a career.  Only 12 Higher Educations Institutions (HEIs) in the UK currently offer therapeutic radiography courses. The financial impact of training arising from the lack of a bursary, and the system for placements which often involves long-distance moves from home, are barriers to recruitment. Therapeutic radiography is not well known as a profession and more work is needed to raise awareness of this as a career option through schools and colleges and via the media.  Work has been undertaken by NHSE (formerly HEE) to explore the current use of apprenticeships in radiotherapy physics and therapeutic radiography and how to expand them and increase uptake in the future. Many centres have found it hard to commit to apprenticeships without multi-year funding being provided, while existing workload pressures reduced the capacity of supervisors and mentors to support apprentices.  In order to further support the advancing practice agenda, it is important that suitable and supportive education and training is available. Work is almost complete on an Advanced Practice training curriculum for non-surgical oncology (including radiotherapy) and the curriculum schema for Enhanced Clinical Practice, linking with the apprenticeship standards, for therapeutic radiographers. Provision of education and training is supported by NHSE and the [regional faculties for the Centre of Advancing Practice](https://advanced-practice.hee.nhs.uk/regional-faculties-for-advancing-practice/) with some enhanced offers being advertised to support the education and training of individuals.  There are three roles within the radiotherapy physics workforce – clinical scientists, clinical technologists-engineering and clinical technologists-dosimetry. For clinical scientists, the NHS England STP training route is nationally funded but hugely over-subscribed. Local ‘route 2’ training schemes exist but must be funded by departments. Other roles have a variety of routes into Radiotherapy Physics. There are particular challenges with an ageing engineering workforce, for whom there is currently no nationally funded training scheme available.  Key challenges across all three professional groups are the availability of adequate funding for clinical practice educators or similar roles, space in which to undertake training, and time included in job plans to undertake training and supervision. Even relatively modest investment here could expand training capacity.  International recruitment may play an important role in the short to medium term, particularly for smaller centres, though it is neither sustainable nor ethical to rely on professionals trained outside of the UK to maintain delivery of UK radiotherapy services. |
| B. ODN context  * Outline the current and projected numbers of trainees entering the workforce across the ODN. * Consider options to expand formal training places, apprenticeships or other routes into the workforce. * Explain the barriers to increasing recruitment locally. Consider funding for teaching capacity, physical space, etc. * Consider any issues specific to your geography or other specific local/regional circumstances; for example, ways of supporting trainees to settle in areas that are hard to recruit to. |

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| Future demand for radiotherapy |
| A. National context Radiotherapy services across the UK are failing to meet current demand as evidenced by national cancer waiting times data. The ‘cancer backlog’ of diagnoses not made during the pandemic is putting significant strain on radiotherapy and SACT treatments now. This is compounded by an exhausted workforce. The national 96% target for patients to start definitive treatment (radiotherapy, SACT or surgery) for a new primary cancer within one month (31 days) of the decision to treat has not been met since Q3 2019/20, and the proportion of patients, nationally, who start cancer treatment within one month has decreased over time. In Q1 2022/23, performance had fallen to 92%. For radiotherapy, specifically, where most patients fall within the subsequent treatment metric, the target of 94% was being met nationally, but [declined](https://www.nuffieldtrust.org.uk/resource/cancer-waiting-time-targets#background) from 97% in Q1 2021/22 to 92% in Q1 2022/23.  [Cancer prevalence](https://www.macmillan.org.uk/about-us/what-we-do/research/cancer-prevalence) is increasing at about 3% per annum; incidence is increasing at 2% per annum but prevalence data is more useful as oncologists provide treatment throughout at cancer pathway. Older people are more likely to develop cancer and they have more complex care needs. Services will need to be developed to assess and manage frailty and to provide prehabilitation prior to treatments. Modelling suggests that 40-50% of all cancer patients need radiotherapy during the course of their disease. This figure is likely to increase as more cancer diagnoses are made at an earlier stage when radiotherapy can be curative and as people live longer with cancer and can benefit from multiple courses of palliative radiotherapy.  Advances in SACT and radiotherapy have enabled more effective treatment and improved outcomes but have also increased the number and complexity of treatment options. Newer radiotherapy techniques like SABR are being used more often. These require upskilling of the therapeutic radiographer workforce and closer supervision of planning by medical physics experts. Staff need appropriately funded CPD and time within the working day to learn and implement new techniques.  Patients receive more sequential treatments than in the past as cancer becomes more like a chronic disease. Patient expectations have, rightly, increased and are likely to continue to do so. Genomics is enabling more individualised decision-making and the range of treatment options in each situation is increasing. New and follow up consultations are likely to continue to take longer and to require more time.  These treatment decisions are all overseen by consultant oncologists, and investing in this workforce – and in the provision of education and training to existing staff as more complex, new treatments become available – will support provision of radiotherapy, SACT, and other treatments and services that COs deliver. Conversely, [pressure on capacity from a significant increase in SACT](https://www.rcr.ac.uk/press-and-policy/policy-priorities/sact-capacity-crisis-nhs), for example, may impact the ability to deliver more radiotherapy. SACT treatments are increasing at approximately 8% per annum.    Living with and beyond cancer is a key part of the NHS cancer plan. While many support roles are perhaps better delivered by non-medical professionals (nurses, therapeutic radiographers, psychologists etc), such services are usually developed, led and supported by consultants. Provision of services such as late effects clinics and psychological support is very variable. These support services are likely to need to increase in number and complexity as treatment becomes more complex and more people survive longer after a cancer diagnosis. Investment is required to enable these additional services to be delivered to radiotherapy patients.  Artificial intelligence (AI), and specifically AI-based auto-segmentation and planning tools, are beginning to impact in the production of safe and effective radiotherapy plans. They may speed up treatment pathways by reducing the time required for contouring, improve the consistency and quality of treatment, and support the introduction of more complex treatments. However, job plans need to include time for quality assurance and clinical evaluation of AI tools; clinical responsibility and the need for careful quality assurance remains. For example, oncologists need headspace and time to undertake structured assessment of auto-contours as part of their job plans to confirm their clinical acceptability, and there are other educational, skill mix and wellbeing impacts of AI to consider. The potential time-savings delivered by new techniques such as AI are limited if staff were already working beyond their contracted hours to cope with demand. In short, AI will not solve the workforce challenge, but has great potential to improve the quality and consistency of treatment, and to improve outcomes.  In 2018, NHSE’s (formerly [HEE’s) strategic framework for the cancer workforce](https://www.hee.nhs.uk/sites/default/files/documents/Cancer-Workforce-Document_FINAL%20for%20web.pdf) estimated the need for consultant oncology posts would double in ten years (p. 57). The CRUK [Full Team Ahead](https://www.cancerresearchuk.org/sites/default/files/full_team_ahead-full_report.pdf) report recommends an increase of 170% or 100% with ideal skill mix to provide optimum care now. The RCR 2021 census estimates the current 943 WTE CO consultants need to become 1444 WTE by 2026 to cope with a 5% overall increase in demand per annum (and to fill current vacant posts) – an increase of 53% over five years. |
| B. ODN context  * Consider demographic data for the ODN compared with national data, whether your area has a higher proportion of older people than is the case nationally, what migration trends might be (building more houses, retirement etc), and the contribution this may have on increased demand and complexity. * Factor in the requirements associated with an aging population (e.g. frailty and prehabilitation services) and with managing an increasing population who survive cancer (e.g. late effects clinics). * Highlight any particular variation across the ODN. |

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| Recommended workforce targets and plan |
| A. National workforce targets  * In **Clinical Oncology**: * Considering projected retirements and the impact of LTFT working, the UK has a 15% shortfall of CO consultants. * By 2027, the shortfall of CO consultants is projected to grow to 25%. * The UK needs to hire 175 additional consultants immediately to deliver services in a way which is safe, provides a good patient experience and reduces stress and burnout. * CO consultants should be managing 150-200 new patients annually over no more than 2 cancer subsites and should not be working more than 10PA. * Expansion of the workforce needs to fill vacancies, remove reliance on doctors working excess PAs *and* increase in line with a rising cancer prevalence of at least 3% and the need to be able to deliver more complex treatments – overall an anticipated increase in demand of 5% per year. * The number of oncologists per 100,000 population varies significantly by region throughout the UK, ranging from 0.8 to 6.1. In areas that have a lower number of oncologists per 100,000 older population, there is a correlation between this figure and waiting times, which has a direct impact on patient care and outcomes. * In **Therapeutic Radiography:** * There is currently a therapeutic radiographer shortfall within the NHS of 10%. * There are circumstances where the funded operational establishment does not meet safe staffing levels and therefore the shortfall figure will be higher. * By 2026, the shortfall of therapeutic radiographers will increase. The rate of increase is dependent on the expansion of Advanced Practitioners to fill roles in other workforce areas. This impacts on the available operational workforce which will also need to increase due to increased demand. * The rollout of the apprenticeship programme will help to offset the shortfall but these posts need to be funded appropriately. * In **Radiotherapy Physics**: * There is currently a clinical scientist shortfall of 7% and a clinical technologist shortfall of 9% * By 2026, the shortfall of clinical scientists is projected to grow to 10%. * There are currently only 27 clinical technologists registered on IPEM’s Technologist Training Scheme. |
| B. ODN targets and plan  * Consider data on shortfall and ideal establishment WTE across the ODN, including additional WTE required to ensure no doctors are working above 10 PA within an appropriate short-medium term time frame (e.g. within the next three years). Consider a direct comparison with national median/optimal figures. * Outline a year-by-year recruitment plan over five to ten years. * Consider innovative options across Trust or Health Board boundaries – e.g. can you employ trainees or senior staff between Trusts or Health Boards? This might open more opportunities for cross-centre working. * Emphasise the need for staff from all professional groups to have time to undertake roles that support workforce development (e.g. educational supervision and examination roles). |

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| Other immediate workforce support measures |
| A. National recommendations Increasing workforce numbers as outlined above is key to building a sustainable radiotherapy service. However, even if the recommended workforce targets are funded and appointed, expansion will be gradual. Increasing workload means that real-time staffing levels may therefore reduce. This, in turn, increases the risk that an increasingly stressed workforce may leave. There are also ways to improve the efficiency and productivity of current staff, many of which will also improve the job satisfaction of those in post and reduce attrition.   * Optimise skill mix across teams to make sure that the right person is involved at every stage of the treatment pathway. What traditionally medical roles can be better performed by therapeutic radiographers or physics staff? How can administrative staff support clinical roles? How can traditional roles be enhanced to ensure people are working at the top of their licence? * Improve staff retention by actively promoting and supporting less than full-time working practice and flexible working patterns. In some areas, notably in radiotherapy physics, adoption of flexible working patterns - for example, 9-day fortnights and evening working – have enabled maintenance and QA of treatment machines outside of other clinicians’ working hours. * Ensure staff have the opportunity to develop their careers through both operational and specialist roles, and by undertaking professional activities on a locoregional/national level. * Take account of the [evidence](https://www.hee.nhs.uk/our-work/reducing-pre-registration-attrition-improving-retention) of generational differences within the therapeutic radiography and physics workforce in terms of aspirations and expectations, for example by adopting a mix of roles to build in opportunities for career development, or by offering opportunities to rotate roles on a six-monthly basis to provide variety, retain interest, and expand skills. * Re-evaluate job plans and resource allocation models to ensure that adequate time is allocated to service leadership, service improvement, teaching, research and supervision. Adjust the job plans and timetables of radiotherapy professionals approaching retirement so that their skills and experience can be used to provide mentorship to more junior staff. Job planning guidance for therapeutic radiographers is underway but there are challenges associated with applying the [Allied Health Professionals Job Planning](https://www.england.nhs.uk/ahp/allied-health-professionals-job-planning-a-best-practice-guide/) proportion of non-clinical domains to operational roles (generally Band 5 to 7 treatment/pre-treatment roles) due to current staffing levels. * Ensure staff have time to be able to attend activities that support their wellbeing, such as Schwartz Rounds, and engaging in formal or informal mentoring relationships. * Improve IT connectivity (e.g. through implementation of single sign-on and inter-system integration and information transfer). Clarify expectations around email etiquette and out of hours working so that email becomes a useful communication tool and not a burden. Ensure that staff have up to date software and hardware that genuinely improves efficiency. * Ensure teams can access appropriate administrative and secretarial support, and reduce administrative burden through smarter use of systems. Provide good project management support to service improvement projects. * Simplify cross-centre working through shared working practices, use of Teams, simplified governance arrangements to support provision of clinical expertise across the region, and reducing duplication of mandatory training requirements. * More effective use of estate capacity as workload continues to increase, including ensuring that there is space available to accommodate more trainees. * Review workplace factors such as access to car parking, adequate cleaning of offices, and access to refreshments and space to take breaks, which make a tangible difference to morale. |
| B. ODN measures How you use these ideas will depend on your current practices and what you are trying to achieve with this strategy. Ask your current staff what is most important to them. There will likely be wins to significantly improve staff experience and efficiency that you can usefully advocate for here – perhaps single centre IT sign on or smart cards for better IT access, or ways of making it simpler for staff to work between hospitals in a network. Including them here may help with their implementation. It may be particularly powerful to highlight excellent practice in one Trust or Health Board so that it can be implemented in others.  You may want to include examples of skill mix to show that you have already implemented multiprofessional working and that trying to do more of it will not easily improve capacity, or to advocate for investment in training and service development capacity to show that, with that investment, skill mix could be further optimised. |

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| Funding sources and risks |
| A. National context NHS England published guidance on the national tariff scheme for 2023/24 and sets out proposals on how NHSE intends to pay for radiotherapy in this first wave. The intention is to retain the block arrangements from April 2024 but to include a quality premium and also separate out equipment depreciation to incentivise machine replacement where old machines are in service.  However, it can be difficult to track money from commissioners to department budgets to ensure that money for radiotherapy is actually invested in local services. Departments are encouraged to talk to commissioners and financial teams to try to ensure that money flows are transparent.  For reasons outlined above, demand for radiotherapy will increase in the next decade and beyond – rising cancer incidence, more early diagnosis, more effective but complex techniques. That demand will only be met by an investment in staff – more efficient systems, AI etc may be part of the answer but they will not solve the problem.  Cancer will remain a public and government priority. Non-surgical oncology services have worked harder for many years to squeeze more out of the current available workforce capacity but are now at their absolute limit. Failure to invest in radiotherapy will lead to more delays and poorer outcomes as more staff retire early and as the remaining workforce become increasingly burnt out, disillusioned and unable to offer the quality of care that patients need. Investment will save both lives and money. |
| B. ODN measures  * Remember that there is money in the system (‘there is *no* money’ is not a valid argument). There are choices to be made as to where and how to spend it. Your task is to convince those holding the budgets to provide radiotherapy with the allocation of funding to meet the requirements of the NHSE radiotherapy service specification. * Explain what local problems you foresee in the short term (1-2y) without investment e.g. increased waiting times for treatment, lack of service development, more inequalities across the ODN. |