



Modernising radiotherapy services in England

Public consultation guide

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Improving patient outcomes

Modernising radiotherapy services in England

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- Given due regard to the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it; and
- Given regard to the need to reduce inequalities between patients in access to, and outcomes from healthcare services and to ensure services are provided in an integrated way where this might reduce health inequalities

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1 Introduction

1. The NHS Five Year Forward View (NHS England, 2014) recognised both the significant improvement in the care delivered by the NHS, together with the challenges and opportunities facing healthcare, particularly in relation to clinical variation, improving outcomes, shaping services around the changing needs and expectations of people, together with the need to maximise the benefits of new treatments and technology. Radiotherapy services are not immune to these challenges and opportunities.
2. Radiotherapy is a core part of modern cancer treatment. It can cure cancers, can assist in alleviating symptoms and is cost effective. It is second only to surgery in its effectiveness in treating cancer with 4 out of 10 patients that are cured of their cancer having received radiotherapy as part, or the whole, of their treatment (Cancer Research UK, 2014)
3. The need to modernise radiotherapy services has been an important component of all recent cancer policy publications, including:
 - Achieving world-class cancer outcomes – a strategy for England 2015-2020 (Cancer Taskforce, 2015)
 - A Vision for Radiotherapy, 2014-2024 (Cancer Research UK, NHS England, 2014);
 - Achieving World-Class Cancer Outcomes: Taking the strategy forward (NHS England, 2016); and
 - Next Steps on the Five Year Forward View (NHS England, 2017).
4. These publications share a single vision; simply that everyone who needs radiotherapy treatment should have access to safe, efficient and high quality care, leading to higher cure rates and fewer side effects. This is also the vision of NHS England and it is with this in mind that NHS England has developed an ambitious programme to modernise radiotherapy services in England.
5. The modernisation programme has two, linked strands.
 - to invest £130 million over three years to replace ageing equipment and invest in new treatment planning systems.
 - to ensure sustainability of radiotherapy services across England, by bringing centres together to make best use of clinical expertise, workforce and new technology and treatment techniques.
6. In order to turn this ambition into a reality, NHS England established an Expert Advisory Group (EAG) under the leadership of the Radiotherapy Clinical Reference Group (CRG) to develop a new radiotherapy service specification for adults, which sets out how these services should be organised in England. A service specification is a contractual document that sets out the clinical, operational and quality requirements associated with a specific clinical service. This helps hospitals to deliver local services to a common national standard.

7. A set of initial principals and proposals for modernising radiotherapy services were published as part of a stakeholder engagement exercise during late 2016, to which NHS England received over 300 responses. The responses that were received during stakeholder engagement have played a significant role in shaping the revised radiotherapy service specification. A [report summarising the responses received and how NHS England has taken these into account is available on the NHS England website](#).
8. This document sets out the proposed changes and the associated benefits, together with the reasons why these changes are needed. It also asks for your views about NHS England's proposed revised radiotherapy service specification, so we can make sure that services are the best they can be. We recommend that you read this guide alongside the service specification.
9. It should be noted that the revised radiotherapy service specification, and associated consultation process, is specifically for adult services. The nature of radiotherapy services for children, teenagers and young adults is changing rapidly, this is set to increase with the introduction of proton beam therapy services in England, from 2018. NHS England intends to develop and publish a new service specification for children, teenagers and young adults shortly.

2 Why do radiotherapy services need to change?

10. Our goal is to ensure that patients who need radiotherapy services are able to access sustainable, high-quality, safe services.
11. Given our ambition to improve and modernise radiotherapy services, maintaining the current service model is no longer considered to be an option. The factors driving this change are complex and interlinked and include:
 - Consensus that patients requiring radiotherapy treatment for the less common and rarer cancers benefit more when they are treated by cancer specific sub-specialist clinical teams seeing sufficient patients numbers and able to provide the specialist supportive care infrastructure. This will ensure that patients have access to the full range of clinical expertise and capability, the very latest treatments and technologies and care specific to their cancer. This is because the number of patients diagnosed with these types of cancers each year is very small which means that some centres see very few patients each year. Consequently, some centres may not have a sustainable and fully functioning infrastructure in place to maintain this level of service.
 - Awareness that whilst the numbers of patients expected to access radiotherapy services is increasing steadily, the radiotherapy workforce is experiencing significant challenges in recruiting key staff groups, such as Medical Physicists. It is therefore vital to organise services so that knowledge, expertise and learning is shared rapidly where possible and concentrated where necessary, to benefit every patient, helping to make all services sustainable and resilient;

- Recognition that in recent years the evidence base for radiotherapy is indicating that radical (i.e., where treatment is given with curative intent) treatment can be given in far fewer fractions, this means that each patient will need to attend for treatment is likely to reduce. This creates both an opportunity and a need to change how services are delivered to maintain service sustainability.
- Understanding that, given the need to maximise every pound of capital investment, it is essential to reap the benefits in efficiency associated with newer equipment, techniques and protocols and by harmonising access arrangements and opening times. This is central to reducing clinical variation and achieving and sustaining cancer waiting times; and
- Commitment to maximise the benefit of the £130 million investment programme and put an end to the slow adoption of new technology and techniques in England as compared to other countries. This will be achieved by greater collaboration between services and professional groups.

3 What changes are we proposing?

12. The specification recommends the creation of eleven Radiotherapy Networks as the mechanism for fostering joint working and integrated approaches, together with the introduction of a new clinical model to ensure that patients can access innovative treatments as close to home as possible. However, some patients with less common and rarer cancers may have to travel to a different centre within the Radiotherapy Network than is currently the case because it specialises in the treatment of their cancer. This is so that each patient can benefit from cancer specific clinical expertise, treatment protocols and techniques, clinical trial opportunities and the associated specialist supportive care.
13. The establishment of Radiotherapy Networks is central to maximising the impact of the £130 million equipment modernisation fund and to that end a proportion of the fund will be offered to Radiotherapy Networks so that they can, on their establishment, develop more integrated and flexible approaches to treatment planning, peer review and audit helping to reduce clinical variation.
14. The revised service specification sets out a number of important requirements for each organisation delivering radiotherapy services, specifically that:
 - Eleven Radiotherapy Networks (Appendix 1a-d) will be established across England. The Networks are designed to enable and facilitate partnership working between radiotherapy providers and enable local pathway redesign and service improvement. Networks will be aligned to existing cancer patient pathways and covering a patient population of between 3-6 million people. This ensures that each Network has sufficient scale and includes at least one tertiary centre able to deliver the full spectrum of treatments for common, less common and rarer cancers within its geography. It also provides opportunities for

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constituent providers to concentrate expertise through integrated and seamless clinical pathways;

- Each radiotherapy provider must be a member of a Radiotherapy Network, which will be underpinned, as a minimum, through a formal Memorandum of Understanding and Inter-provider Agreements;
- Each Network must establish a Network Board, to be chaired by a Cancer Alliance lead, to ensure that radiotherapy services are considered in the context of the whole system.
- Each Network Board must agree network-wide:
 - i. Implementation plans for nationally agreed treatment protocols and care pathways, to be defined by NHS England through the Radiotherapy Clinical Reference Group;
 - ii. Workforce plans;
 - iii. Operational delivery plan, including capacity/demand planning, a clear and coordinated approach to the rapid rollout of modern, innovative techniques to all centres within the network, and how clinical trials will be coordinated; and an
 - iv. Equipment replacement and investment plan which sets out a clear trajectory for ensuring that network IT infrastructure solutions are developed to underpin more innovative operational delivery approaches.

15. The service specification also includes the clinical model. This sets out a framework for the minimum case numbers for each sub-specialist clinical area that each centre must meet in order to treat each of the less common or rarer cancers locally. It also describes a set of potential options to enable effective partnership working.

16. It is proposed that radiotherapy provision at each centre should be shaped to support the range of cancers treated by sub-specialist teams hosted at the local hospital(s), so that patient care is underpinned by the appropriate expertise of the multi-professional team.

17. This means that clinical teams serving the network geography will be established for each cancer type and that each specialist will be required to treat a minimum 25 radical cases per year. Because of the need to ensure service continuity, each service will be required to treat a minimum of 50 cases per year. This is important because we know there is some clinical evidence as well as clinical consensus that patients benefit more when they are treated by cancer specific sub-specialist clinical teams with the expertise developed from treating larger numbers of patients as well as offering opportunities to access clinical trials.

18. The clinical evidence and basis of the introduction for the clinical model was set out as part of the stakeholder engagement that was conducted during 2016. This consisted of a literature search and synthesis which was carried out in partnership

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with Public Health England. Through this, NHS England sought to answer three questions:

- What is the volume outcome relationship for radical or curative radiotherapy or brachytherapy or curable cancer?
- What is the population base for radiotherapy access?
- What organisational structures or configurations might impact on access to radiotherapy and radiotherapy outcomes?

19. The literature search and synthesis confirmed that, at present, the best evidence to use in relation to these questions is in the form of guidelines published by the National Institute of Health and Care Excellence (NICE) and/or Royal College publications relating to specific tumour types. However, there are some cancer site specific papers which have been taken into account by the EAG. The EAG has used the available evidence to inform the development of the clinical model and Service Specification. To support the consultation, NHS England has updated the [supporting information document](#) published during the public engagement which contains a summary of the information used.
20. However, while there is an absence of compelling published and peer reviewed evidence relating to service configuration and the relationship between volume and outcome for radiotherapy, as opposed to surgery where this relationship is well documented, there is published evidence to suggest that staff competency is greatly enhanced through regularly delivering treatments so that the specialist work becomes “routine” to the team. Higher volumes of activity therefore help achieve a regular weekly throughput of patients. The EAG has used this evidence as a benchmark to inform their recommendations.
21. There is also evidence of significant variation in the provision of radiotherapy services. An audit of prostate fractionation in 2017 using the radiotherapy dataset (RTDS), accepting that there are different indications for the treatment of prostate cancer which will mean that some differences in fractionation is expected, the fractionation used to treat radical patients ranged from twenty through to forty-eight treatments. A treatment schedule of twenty treatments is now considered to be optimal for many low risk prostate cancer patients.
22. Furthermore, the EAG has highlighted a number of potential problems with low activity/case throughput and / or single-handed oncologist practice (which means that there is only one oncologist at a centre treating a less common cancer) because this can lead to a lack of clinical and/or planning expertise, a lack of cross-cover and delays to treatment commencing. This is a particular issue for some cancer types where it is very important to not delay the start of treatment. The Royal College of Radiologists (RCR) define these cancer types as ‘category 1’ cancers and this group includes radical treatments for patients with lung, oesophagus, bladder, some head and neck sub-types and cervical cancers (RCR, 2012).
23. Where there are low activity/case numbers, it is also the view of the EAG that there is insufficient critical mass of cases to quality assure, drive innovation, review literature and provide research leadership. Participation in clinical trials,

through Quality Assurance (QA) approaches, has been shown to improve the accuracy of radiotherapy delivery, which is critical for patient safety and protocol adherence.

24. It is not NHS England's intention to reduce the number of radiotherapy providers, nor is it considered to be a likely outcome of these proposals. Our aim is to encourage radiotherapy providers to work together in Networks to concentrate expertise and improve pathways for less common and rarer cancers. This may mean that in some areas that some activity is redistributed within the Network in order to secure access for patients to the very best specialist treatment and care.
25. These proposals also aim to improve workforce sustainability through service consolidation, so that integrated approaches to learning and development for staff are available to ensure high quality services are maintained and developed consistently in England long into the future.
26. Our proposals will mean that each Radiotherapy Network Board, with the support of its local commissioners, is able to redesign and determine its own care pathways. It is for this reason that the consultation, while highlighting the potential impacts of the proposed service specification and clinical model, does not seek to state the detail of future care pathways or identify the locations of sub-specialist teams in each Network. This will be determined by each Radiotherapy Network Board.
27. As a result, NHS England recognises that further public involvement and consultation activities may need to be undertaken in different geographical areas as Networks redesign clinical pathways.

4 The benefits of the proposed new model

28. What we want to achieve is safe, high quality, innovative and efficient radiotherapy services that are accessible to patients, meets their needs but can continue to be delivered and developed in a sustainable and consistent way both now and in the future.
29. Our proposals will enable the following benefits to be realised:
 - Improved access to modern, innovative radiotherapy techniques, enabling more patients to benefit from cutting-edge technology and treatments;
 - Improved experience of care as patients will be managed by an experienced multi-professional tumour specific subspecialist team able to provide holistic care to patients;
 - Increased participation in research and clinical trials, it is anticipated that up to 15% more patients will be treated within a clinical trial framework over three years, through improved patient referral between centres within networks, aiding faster development of new treatments for patients;

- Reduced variation in quality by reducing mortality and morbidity from adverse side effects and the introduction of nationally developed treatment protocols;
- More efficient use of equipment by improving service operating arrangements, standardising clinical practice and replacing old equipment with efficient technologies. On average, it is estimated that this will secure a 15% increase (estimated increase based on driving improvement of the services with lower throughput up to the levels of the better performers) in equipment utilisation for England as a whole over the next 3 year period. This will be achieved by tackling the wide variation in the average number of patients being treated by each service each year in England (National Radiotherapy Dataset) and supported by the equipment modernisation programme; and
- Patients with less common and rarer cancers will benefit from improved access to innovative and specialist high quality radiotherapy, treated by expert clinicians who will have regular experience of treating their condition.

5 Understanding the potential impact of these proposals

30. To help explain how we think Radiotherapy Networks will implement the new service specification, we have completed an [Integrated Impact Assessment](#). The assessment sets out what the proposals could mean for service users and providers at a local, network and national level.
31. The service specification does not propose any service closures, nor does it state how local pathways should be redesigned to take account of the new clinical model within the service specification. However, the implementation of the service specification, and particularly the clinical model, will mean that some activity flows will need to change. This relates to the aim to ensure that people with the less common cancer and rarer cancers requiring radical radiotherapy treatment receive care from experienced specialist teams with access to modern equipment. In other words, if these proposals are implemented, some patients might receive their radiotherapy treatment in a different location than they would were they to access it now.
32. Because it is important that each Radiotherapy Network determine how to best implement the service specification for their local populations, NHS England has not completed a 'final state' impact assessment. Instead, NHS England has compiled an impact assessment which highlights where there is a need for local pathway redesign.
33. The Impact Assessment uses activity data drawn from the national Radiotherapy Dataset together with the assumption that all hospitals within a network are part of the Network and that there is at least one regional specialist centre for radiotherapy, providing treatment that includes all the rare and uncommon cancers, plus local centres that will treat common cancers as a minimum.

34. Specifically, the Impact Assessment identifies:

- The number of patients treated with radical intent (all cancers), by cancer diagnosis and provider
- Where a single provider does not treat 50 radical cases or more for each of the less common and rare cancers, then assumptions were made that either:
 - The provider would work in partnership with a neighbouring centre (each treating around 50 cases per year); OR
 - That treatment would be delivered at a neighbouring subspecialist centre, not necessarily the largest tertiary centre in the network.

35. Based on this assessment, the majority of patients will continue to have treatment locally. It is also estimated that approximately 1,100 patients requiring radical treatment or the less common and rare cancer cases in England will need to be treated in a different centre within the Network than is currently the case. This equates to approximately 1% of the total number of patients treated with radiotherapy each year.

36. The impact assessment highlights that the 1,100 cases predominantly consist of:

- Gynaecology cancers
- Sarcoma (soft tissue)
- Brain cancer
- Head and neck, particularly cancers of the nasopharynx, nasal cavity and sinuses
- Upper Gastro-intestinal, particularly cancers of the gullet and stomach
- Liver, pancreas and bile duct

37. A summary of the Impact Assessment, showing the assessment made of current radical treatment volumes by radiotherapy provider, is contained within Appendix 1a-d.

38. It is acknowledged that each Radiotherapy Network will, as a result of the revised service specification, need to undertake local pathway redesign. This is particularly important in relation to ensuring that rarer and less common cancers are treated in centres that undertake at least 50 cases per year. Whilst the impact assessment does illustrate the clinical focus areas for each Radiotherapy Network, it doesn't state which centres within Networks should treat particular cases. This is because local decision making is essential to ensuring that the best decisions are made about service provision and this is a central component of the Radiotherapy Network service specification.

39. The final configuration of services in each network will be determined by Radiotherapy Network Boards, with their Cancer Alliances in collaboration with their local Specialised Commissioners. NHS England also considers that, in some areas, further local public involvement and consultation activities may be required to support the implementation process and ensure that local communities are part of the decision making process. Furthermore, it is expected that the implementation of any revised pathway arrangements would not impact on any patients undergoing active radiotherapy treatment.

40. NHS England, in developing the service specification, is undertaking an Equalities Impact Assessment. Through this consultation we are specifically seeking views on the impacts of the proposals on different groups so that we can consider how to reduce these impacts during implementation.
41. In recognition that some areas of the country will be in a position to establish Radiotherapy Networks more quickly than others, we are proposing a phased approach to their introduction. We expect those who are able to move most quickly to introduce their Network from April 2018, with the whole country covered by April 2019. Learning from those who go first will be shared with those following – particularly on governance and accountability (including contractual levers etc). Cancer Alliances will be key in supporting the establishment of the Networks and in sharing learning across the country.

6 Involving you – we need your views

42. NHS England is keen to receive your views and answer your questions on the proposals for the vision of radiotherapy services across England.
43. Throughout the work that has taken place so far we have been talking to hospital staff, doctors, nurses and public and patient engagement groups. The progress and developments so far have resulted in the proposals that are described in this document.
44. We have now launched a period of consultation to get more views on these proposals from patients, clinicians, carers and members of the public who may have an interest in radiotherapy services.
45. **The consultation period, runs from 18 October to 18 December 2017.**
46. We are happy to attend meetings or events that you may be hosting to talk the development of radiotherapy services across England.
47. Your views will help NHS England to further shape and refine proposals for the delivery of safe and effective high quality radiotherapy services that are easy for people to access and meets their needs.

7 How to give your views

- Complete the [online survey](#)
- Email us: england.npoc-cancer@nhs.net
- Write to us: Radiotherapy Consultation, NHS England, Floor 3B, Skipton House, 80 London Road, London, SE1 6LH.
- Join a webinar (online meeting): details of these are available via [NHS](#)

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[England's upcoming webinar's page](#)

- **Invite us:** We are happy to attend meetings or events that you may be hosting to talk the development of radiotherapy services across England. Please email us at: england.npoc-cancer@nhs.net.

8 Glossary

Benign tumour	A non-cancerous growth that lacks the ability to invade neighbouring tissue or to spread to other parts of the body, but, when in the brain, can cause serious harm.
Cancer Alliance	A way of organising local stakeholders, such as commissioners and providers, to lead improvement and key to effecting the transformational change needed to achieve world-class cancer outcomes for their populations
Cancer Network	A geographical area and population size that covers the cancer referral pathways to a single tertiary centre
Cancer Research UK	A UK cancer research and awareness charity and the world's largest independent cancer research charity.
Cancer Vanguard	A joint cancer hospital NHS England approach to developing new models of cancer care including accountability for whole population service planning and provision; this learning will be shared with Cancer Alliances as they develop.
Clinical Reference Groups (CRG)	A group consisting of clinicians, commissioners and patient/carer members, that provides clinical advice to NHS England for a specific prescribed specialised service.
Clinical Oncology	The medical specialty which oversees the delivery of the majority of non-surgical cancer treatment (radiotherapy and systemic therapy) in the UK; each specialises in the management of specific types of cancer.
Co-dependencies	Other services in a hospital which are needed to assist the provision of a specialised service.
Conservative management	Treatment designed to avoid radical medical therapeutic measures or operative procedures.
Comprehensive cancer network	A tertiary centre providing the full range of specialist cancer surgery and hosts the full range of specialist cancer MDTs AND in line with the tumour specific Improving Outcomes Guidance. This includes meeting the population requirements and patient numbers for the full range of cancers including rare cancer specialist MDTs (e.g. sarcoma, neuro-oncology, paediatric oncology etc)
Elective	Pre-arranged; booked in patient treatment.
Extracranial	Outside of the cranium (skull)
Fraction	The term describes how the full dose of radiation required to treat a tumour is divided into a number of smaller doses.
Gut	Oesophageal and Liver cancers
Image Guided Radiotherapy (IGRT)	Imaging at pre-treatment and delivery, the result of which is acted upon, that improves or verifies the accuracy of radiotherapy. IGRT encompasses the whole range of imaging, from simple to more complex imaging, that allows direct visualisation of the tumour and surrounding tissue.
Intensity Modulated Radiotherapy	High precision form of radiotherapy. It moulds (conforms) the shape and dose of the radiation precisely to the volume of tumour tissue that needs to be treated, reducing exposure to healthy surrounding tissue.
Incidence rates	The number of new cases for a population in a given time period.
Innovative radiotherapy	The ability to deliver radiation that is more targeted at a patient's cancer, and causes less damage to the surrounding healthy tissue. It includes approaches (including planning, software, training and delivery) and treatments with the potential to deliver significant patient benefit which are not currently in mainstream

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	clinical use in England, but have the potential to become available in the next several years.
Late Effects	Some body tissues express radiation damage (at least 3) months after treatment and these side effects may be enduring and troublesome in a minority of patients.
Lesion	An abnormality in the tissue usually caused by disease or trauma.
Malignant tumour	A cancerous growth involving abnormal cell growth with the potential to invade or spread to other parts of the body.
MDM	A multi-disciplinary meeting involving members of the MDT.
MDT	A multi-disciplinary team involving the key staff delivering the service e.g. neurosurgeon, oncologist, radiologist, physicist.
Metastasis	Spread from the origin (primary site)of the cancer though either lymphatic channels(to lymph nodes)or more seriously to distant sites via the bloodstream.
NHS Commissioning Board	The predecessor organisation to NHS England
Palliative radiotherapy	Given with intention to relieve/prevent symptoms or prolong life with minimal expectation of cure, usually with fewer fractions than radical treatment together with a sub-radical dose.
Prescribed specialised services	Services provided in relatively few hospitals to catchment Population of more than one million people.
Proton Beam Therapy	A type of particle radiotherapy that has no 'exit ' dose, which potentially can be exploited to give clinical advantages over conventional X Ray(photon)radiotherapy in certain patients.
Radical radiotherapy	Given with curative intent either definitively as main / primary treatment or as adjuvant therapy together with surgery (or less often chemotherapy) as supplementary treatment.
Radiotherapy Physics	Responsible for the safe and effective planning, delivery and adaptation of a prescribed radiotherapy course of treatment.
RTDS	Radiotherapy Data Set is a mandatory requirement of all NHS E radiotherapy providers to collect and submit consistent and comparable data in order to inform service planning, commissioning and research.
Stereotactic Ablative Radiotherapy (SABR)	Refers to the precise irradiation of an image defined extra cranial lesion (not in the brain) and is associated with the use of a high radiation dose delivered in a small number of fractions. The technique requires specialist positioning equipment and imaging to confirm correct targeting. It allows sparing of the surrounding healthy normal tissues. SABR is currently supported by a national clinical policy for non-small cell lung cancer. Other indications are being evaluated.
Stereotactic radiosurgery (SRS)	Refers to the precise irradiation of an image defined lesion, similar to SABR, but given as a single fraction. It has become the standard treatment for a number of cranial (in the brain) treatments. National clinical policies are in place for a variety of conditions
STP	NHS E organisations and local councils have formed Sustainability and Transformation Partnerships in 44 geographical areas of England to plan improved health and care for the whole population.
Subspecialisation	Clinical Oncologists specialise in a limited number (recommended 1 or 2 but at most 3) of cancer subsites (e.g. breast cancer, lung cancer etc) in order to facilitate up-to-date expertise.
Therapeutic Radiographer	An allied health professional (AHP) who has undergone specific training with responsibility for the planning and delivery of accurate radiotherapy to cancer patients.

9 Appendices

Appendix 1a: London Region - Radical Caseload of <50, by provider and Network

Radiotherapy Network	Cancer Alliance(s)	Radiotherapy Providers	Specialties with an annual radical case-load of <50
North Central and North East London	North Central and North East London	Barking, Havering and Redbridge Hospitals NHS Trust	(i) Head and Neck; (ii) Upper GI; (iii) HPB; (iv) Gynaecology; and (v) Sarcoma
		Barts Health NHS Trust	(i) Upper GI; (ii) HPB; and (iii) Sarcoma
		East and North Hertfordshire NHS Trust	(i) Sarcoma
		North Middlesex University Hospital NHS Trust	(i) Upper GI; (ii) HPB; (iii) Brain tumours; and (iv) Sarcoma
		Royal Free Hampstead NHS Trust	(i) Upper GI; and (ii) HPB
		University College London Hospitals NHS Foundation Trust	(i) Upper GI; and (ii) HPB
North West London, South West London, Surrey and Sussex	(1) North West and South West London; (2) Surrey and Sussex	Brighton and Sussex University Hospitals NHS Trust	(i) Sarcoma
		Imperial College Healthcare NHS Trust	(i) Upper GI; and (ii) HPB
		Royal Marsden NHS Foundation Trust	
		Royal Surrey County NHS Foundation Trust	(i) Sarcoma
South East London and Kent and Medway	(1) South East London; (2) Kent and Medway	Guy's and St Thomas' NHS Foundation Trust	(i) Sarcoma
		Maidstone and Tunbridge Wells NHS Trust	(i) Sarcoma

Appendix 1b: South Region - Radical Caseload of <50, by provider and Network

Radiotherapy Network	Cancer Alliance(s)	Radiotherapy Providers	Specialties with an annual radical case-load of <50
Peninsula, Somerset, Wiltshire, Avon and Gloucestershire	(1) Peninsula; (2) Somerset, Wiltshire, Avon and Gloucestershire	Gloucestershire Hospitals NHS Foundation Trust	(i) Sarcoma
		Plymouth Hospitals NHS Trust	(i) Brain tumours; (ii) Sarcoma; (iii) Upper GI; (iv) HPB; and (v) Head and neck
		Royal Cornwall Hospitals NHS Trust	(i) Upper GI; (ii) HPB; (iii) brain tumours; (iv) Gynaecology; and (v) Head and neck
		Royal Devon And Exeter NHS Foundation Trust	(i) Head and neck; (ii) Upper GI; (iii) HPB; (iv) Brain tumours; and (v) Sarcoma
		Royal United Hospital Bath NHS Trust	(i) Head and neck; (ii) Upper GI; (iii) HPB; (iv) Gynaecology; (v) Brain tumours; and (vi) Sarcoma
		South Devon Healthcare NHS Foundation Trust	(i) Head and neck; (ii) Upper GI; (iii) HPB; (iv) Brain tumours; and (v) Gynaecology
		Taunton and Somerset NHS Foundation Trust	(i) Head and neck; (ii) Upper GI; (iii) HPB; (iv) Gynaecology; (v) Brain tumours; and (vi) Sarcoma
		University Hospitals Bristol NHS Foundation Trust	(i) Sarcoma
Wessex and Thames Valley	(1) Wessex; (2) Thames Valley	Hampshire Hospitals NHS Trust	
		Oxford Radcliffe Hospitals NHS Trust	(i) Sarcoma
		Poole Hospital NHS Foundation Trust	(i) Upper GI; (ii) HPB; and (iii) Brain tumours
		Portsmouth Hospitals NHS Trust	(i) Upper GI; (ii) HPB; (iii) Sarcoma; and (iv) Gynaecology
		Royal Berkshire NHS Foundation Trust	(i) Gynaecology; (ii) Upper GI; (iii) HPB; (iv) Brain tumours; and (v) Sarcoma
		University Hospitals Southampton NHS Foundation Trust	(i) Sarcoma

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Appendix 1c: Midlands and East Region - Radical Caseload of <50, by provider and Network

Radiotherapy Network	Cancer Alliance(s)	Radiotherapy Providers	Specialties with an annual radical case-load of <50
East Midlands	East Midlands	Derby Hospitals NHS Foundation Trust	(i) Upper GI; (ii) HPB; (iii) Brain tumours; (iv) Head and neck; and (v) Sarcoma
		Northampton General Hospital NHS Trust	(i) Upper GI; (ii) HPB; (iii) Brain tumours; and (iv) Sarcoma
		Nottingham University Hospitals NHS Trust	(i) Gynaecology; and (ii) Sarcoma
		United Lincolnshire Hospitals NHS Trust	(i) Upper GI; (ii) HPB; and (iii) Brain tumours
		University Hospitals of Leicester NHS Trust	(i) Gynaecology; and (ii) Sarcoma
West Midlands	West Midlands	Shrewsbury and Telford Hospital NHS Trust	(i) Upper GI; (ii) HPB; (iii) Gynaecology; and (iv) Brain tumours
		Royal Wolverhampton Hospitals NHS Trust	(i) Upper GI; and (ii) HPB
		University Hospital Birmingham NHS Foundation Trust	
		University Hospitals Coventry and Warwickshire NHS Trust	(i) Sarcoma
		University Hospital of North Midlands NHS Trust	
		Worcester Acute Hospitals NHS Trust	
East of England	East of England	Cambridge University Hospitals NHS Foundation Trust	(i) Sarcoma
		Colchester Hospital University NHS Foundation Trust	(i) Sarcoma; (ii) Brain tumours; (iii) Gynaecology; (iv) Upper GI; and (v) HPB
		Ipswich Hospital NHS Trust	(i) Sarcoma; (ii) Brain tumours; (iii) Gynaecology; (iv) Upper GI; and (v) HPB
		Norfolk and Norwich University Hospital NHS Trust	(i) Sarcoma; and (ii) Brain tumours
		Peterborough and Stamford Hospitals NHS Foundation Trust	(i) Upper GI; and (ii) HPB
		Southend University Hospital NHS Foundation Trust	(i) Sarcoma; (ii) Brain tumours; (iii) Upper GI; (iv) HPB; and (v) Gynaecology

Appendix 1d: North Region - Radical Caseload of <50, by provider and Network

Radiotherapy Network	Cancer Alliance(s)	Radiotherapy Providers	Specialties with an annual radical case-load of <50
Greater Manchester, Cheshire and Merseyside, Lancashire and South Cumbria	Greater Manchester, Cheshire and Merseyside, Lancashire and South Cumbria	Lancashire Teaching Hospitals NHS Foundation Trust	(i) Sarcoma
		Christie Hospital NHS Trust	
		Clatterbridge Cancer Centre	
West Yorkshire, South Yorkshire, Bassetlaw, South Derbyshire, Hardwick and Humber Coast and Vale	(1) West Yorkshire; (2) South Yorkshire, Bassetlaw, South Derbyshire and Hardwick; (3) Humber Coast and Vale	Hull and East Yorkshire Hospitals NHS Trust	(i) Sarcoma
		Leeds Teaching Hospitals NHS Trust	
		Sheffield Teaching Hospitals NHS Foundation Trust	(i) Sarcoma
North East and Cumbria	North East and Cumbria	Newcastle Upon Tyne Hospitals NHS Trust	
		North Cumbria University Hospitals NHS Trust	
		South Tees Hospitals NHS Trust	(i) Sarcoma