

SCHEDULE 2 – THE SERVICES

A. Service Specifications

Service Specification No.	170091S
Service	Adult External Beam Radiotherapy Services Delivered as Part of a Radiotherapy Network
Commissioner Lead	Specialised Commissioning, NHS England
Provider Lead	<i>To be completed at contract stage</i>

1.	Scope
1.1	<p>Prescribed Specialised Service</p> <p>This Service Specification (the “Specification”) covers the provision of external beam radiotherapy for adults (≥18 years of age) in England.</p>
1.2	<p>Description</p> <p>The scope of specialised services is set out within the Prescribed Specialised Services Manual (the “Manual”). The Manual states that radiotherapy services include all use of this treatment modality including brachytherapy and any associated outpatient activity. In addition, that radiotherapy includes all provision of intracranial stereotactic radiosurgery/radiotherapy (SRS/SRT) and extracranial stereotactic radiotherapy.</p> <p>Radiotherapy services are commissioned to treat both malignant and benign disease, though the majority of people undergoing radiotherapy are treated for malignant disease. Radiotherapy may be used:</p> <ol style="list-style-type: none"> i. To cure an illness – for example by destroying a tumour. This is called ‘radical’ treatment; ii. To control symptoms – for example, to relieve pain. This is called ‘palliative’ treatment; iii. To modify disease progression - for example to eradicate area(s) of disease, but in expectation of eventual disease progression; iv. Before surgery – for example, to shrink a tumour to make it easier to remove; and v. After surgery – for example, to destroy small amounts of tumour that may be left. <p>Both malignant and benign conditions must be treated and governed by the same standards.</p> <p>The service specification, which must be read in conjunction with the service specification for the Operational Delivery Networks for adult radiotherapy services (NHS England Ref: 170092S), sets out the clinical, service and quality requirements and standards for the delivery of external beam radiotherapy to which all providers of radiotherapy must comply. It also establishes that radiotherapy services (the “Services”) will be delivered on a network basis and that each of the current fifty-two providers of the Services must be a member of a designated Network (Appendix C).</p>

The Services are tertiary services accessed only by referral from a secondary care Consultant, usually following at least one multi-disciplinary team (MDT) discussion. The Services cannot be directly accessed from primary care.

Each Radiotherapy Operational Delivery Network (the “Network”) is required to review and agree sub-speciality arrangements governing the provision of the Services across the Network. This means that provider organisations within the Network may be commissioned to treat different sub-specialties as detailed in Appendix D, as is currently the case. Some provider organisations may only be commissioned to treat certain sub-specialties with some only as part of a partnership arrangement with a neighbouring centre. Each member provider organisation must only deliver radiotherapy in accordance with the Network arrangements set out within Appendix D.

NHS England has published Clinical Commissioning Policy and a number of Policy Statements in order to define the scope of commissioned techniques and protocols. These should be read in conjunction with the Specification. Paediatric Radiotherapy, Proton Beam Radiotherapy, Brachytherapy and Intracranial SRS/SRT services are excluded from the Specification because they are subject to separate service specifications, published by NHS England.

1.3 How the Service is Differentiated from Services Falling within the Responsibilities of Other Commissioners

NHS England commissions all radiotherapy activity at specified centres. Clinical Commissioning Groups (CCGs) do not commission any elements of the Services.

2. Care Pathway and Clinical Dependencies

2.1 Service Overview Radiotherapy is the safe use of controlled doses, called fractions, of ionising radiation to treat people who have cancer. The aim of radiotherapy is to deliver as high a dose of radiation as both possible and necessary to destroy the cancerous tumour(s), whilst sparing the surrounding normal tissues. It is often used on its own or as part of a treatment plan which includes surgery and/or chemotherapy. Radiotherapy services are an integral component of modern cancer care with four out of ten people that are cured of cancer having received radiotherapy as part, or the whole, of their treatment plan (Cancer Research UK, 2014).

2.2 The Radiotherapy Network

The establishment of the Network is designed to facilitate meaningful partnership working and enable the achievement of NHS England’s ambition to provide modern radiotherapy services as set out within ‘A Vision for Radiotherapy, 2014-2024’ (NHS England, Cancer Research UK, 2014). Every member of the Network must contribute to the delivery of the Network work programme which will aim to:

- a) Improve access across the Network to modern, advanced and innovative radiotherapy techniques, enabling more Service Users to benefit from cutting-edge technology and treatments;
- b) Improve the experience of care by ensuring that Service Users will be managed by an experienced multi-professional tumour specific subspecialist team able to provide holistic care;
- c) Increase participation in research and clinical trials by an average of 15% increase over 3 years in England, aiding faster development of new treatments and help drive the development of clinical services;

- d) Reduce variation in quality by adopting standardised best practice protocols thereby improving Service User outcomes including reducing mortality and morbidity from adverse side effects; and
- e) Reduce variation in equipment utilisation in England through changing operating arrangements, clinical practice and equipment replacement; an average 15% increase in equipment utilisation for England as a whole is expected over the next 3 year period aligned to the equipment modernisation programme.

Each provider within the Network will be required to contribute to the development of and agree a Memorandum of Understanding (MOU), or equivalent written agreement. This will set out how the Network and Network Oversight Group will function, including how it will develop and agree its annual work programme, audit and benchmarking arrangements and how the Network Oversight Group fits into existing and established provider and commissioner governance arrangements.

Provider organisations will ensure that there is appropriate representation drawn from professional leads from the three main specialisms (Radiotherapy Physics, Therapeutic Radiography and Clinical Oncology) as members of the Network Oversight Group or any agreed sub-groups. The Network Oversight Group will be chaired by a Chief Executive Officer or Executive Director drawn from the Board of one of the Cancer Alliances covered by the Network, representing the wider cancer system.

2.3 Radiotherapy

Radiotherapy forms part of an overall cancer management and treatment pathway and is often used either on its own or as part of a treatment plan which includes surgery and/or chemotherapy. Cancer treatment plans are determined through multi-disciplinary team (MDT) discussion. Referral for radiotherapy treatment is made by a Consultant Clinical Oncologist who will be a member of a tumour specific MDT and/or Specialist MDT (SMDT).

Radiotherapy is generally delivered by a machine called a Linear Accelerator or 'LINAC', which is housed in a thick concrete 'bunker' or specially adapted room in order to protect people from radiation exposure. LINAC is a generic term for all megavoltage radiotherapy equipment.

The process of radiotherapy is complex and involves an understanding of the principles of medical physics, radiobiology, radiation safety, dosimetry, radiation treatment planning, simulation and interaction of radiation with other treatment modalities. Treatment involves the calculation of an overall dose of radiation sufficient to achieve the aim of the treatment plan which will either be curative (known as 'radical' treatment) or palliative. The overall dose is then usually divided into a number of smaller doses, called 'fractions'. The purpose of delivering the overall dose in a number of fractions is to allow healthy cells to recover during treatment.

Palliative treatment is usually given in significantly fewer fractions, sometimes a single fraction will be sufficient, than compared to curative treatment. Fractions are typically delivered on a daily basis (five days per week) and over a number of weeks, depending on the tumour site. Usually treatment is provided on an outpatient (OPA) basis, however, some Service Users may be admitted due to their overall condition and/or co-morbidities, rather than as a result of their radiotherapy.

2.4 Core Service Requirements

This Specification has been developed to ensure that the services being delivered offer high quality external beam radiotherapy to each Service User; therefore, each provider must:

- Have a fully funded, externally accredited quality management system in place, in accordance with the requirements of *Towards Safer Radiotherapy (Royal College of Radiologists et al, 2008)*;
- Evidence that strong clinical and operational governance arrangements are in place, specifically these must:
 - Demonstrate clear lines of accountability with detailed delegated responsibilities at all levels amongst the health professional and managerial staff of the department;
 - Identify a Head of the Radiotherapy Service, who is responsible and accountable for the development and management of the service; and
 - Demonstrate that there is a single multi-professional team supported by Heads of Service for each professional group.
- Ensure that all non-surgical oncologists operate as core members of the associated tumour specific MDTs in which they subspecialise;
- Ensure that there is access to a tumour site specific multi-professional support team for each of the radical subspecialist cancers treated locally;
- Ensure that accurate treatment is delivered within an evidence-based approach and with adherence to agreed protocols, such as NHS England Clinical Commissioning Policies and Policy Statements, together with any other mandatory guidance;
- Ensure that each person requiring radiotherapy (including urgent and palliative radiotherapy) as part of their treatment, receives it in a timely manner and in the context of a safety-conscious culture;
- Ensure that there are out of hours arrangements for Service Users requiring urgent treatment;
- Ensure that all professional groups participate in all aspects of the Network work programme, peer review, quality assurance programmes and audit, and that any issues of unwarranted variance in clinical practice are addressed, e.g. the Royal College of Radiology (RCR) guidelines <https://www.rcr.ac.uk/publication/radiotherapy-dose-fractionation-second-edition>
- Ensure that data is made available for effective peer review of target volumes. <https://www.rcr.ac.uk/publication/RT-target-definition-peer-review>
- Ensure that there is access to modern equipment, able to deliver advanced radiotherapy techniques in order to improve cure rates, prevent and relieve symptoms, and improve Service User's experience, whilst minimising any long-term side effects of treatment;
- Ensure that radiotherapy treatment machines are replaced once they reach 10 years old and that any computer software and treatment planning systems are updated regularly. New equipment should meet the standards as detailed in the national technical core specification;
- Ensure that all the information included in the mandated national radiotherapy dataset (RTDS) is collected and submitted according to national requirements and timescales;

- Ensure that robust mechanisms are in place for monitoring treatment outcomes and protocol adherence. Any deviation from these protocols must be clearly documented and investigated with regular reviews;
- Ensure that where radiotherapy is used concurrently with other treatments (such as brachytherapy or chemotherapy), it should be delivered where there are locally based clinical oncologists, integrated appropriately with other treatments and scheduled to meet the needs of the Service User;
- Continually review the working arrangements of the service with the aim to improve equipment utilisation rates to meet the national benchmark of 9,000 attendances per year as a service average by ensuring that:
 - Each machine is available to treat people at least 5 days per week;
 - That servicing and planned preventative maintenance, quality assurance checks and other key activities (including capacity to accommodate machine breakdowns) do not disrupt Service User's treatments and should be undertaken on any of the other days of the week; and
 - Ensure there are contingency plans and arrangements for the management of Service Users during periods of staff shortage and machine maintenance and breakdown should be in place and form part of the Network workforce sustainability strategy.
- Ensure that clinical trials are discussed with eligible Service Users and offered to them at an alternative centre within the Network if the clinical trial is not available locally; and
- Ensure that a data sharing agreement is in place to facilitate partnership working between providers and to enable accessibility via a web portal and secure gateway, by an approved person from each provider in the Network.

In addition, the provider should ensure that;

- There is a minimum of at least two subspecialist Consultant Clinical Oncologists to manage each tumour site. Each should concentrate their cancer tumour site subspecialist experience two broad clinical areas. (See 2.6)
https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfco181_census_2017.pdf
- Each Consultant Clinical Oncologist should be responsible for at least 25-50 cases of radical radiotherapy per year for each tumour site treated. This equates to a clinical oncologist managing and planning one new subspecialist cancer case every 1-2 weeks. This will provide a reasonable throughput for the treatment planning team; and will be cost effective as a site specialisation for the clinical oncologist; and
- There are at least two Consultant Clinical Oncologists for each tumour site treated per provider. This equates to each provider delivering between 50-100 radical radiotherapy treatments per tumour site per year.

It is acknowledged that these three additional requirements may take time to fulfil and may be very challenging to meet in geographically remote areas. It is recognised that it is important to strike the right balance between supporting local access for Service Users and ensuring access to specialist expertise. For these reasons, the Specification sets out a range of partnership working arrangements (Section 2.5) that each radiotherapy provider, and the Network as a whole, must adhere to.

All provision of radiotherapy services, including those delivered by a contracted provider from another hospital site (satellite service) are subject to the requirements of the Specification.

In addition, the provider delivering services at a satellite facility hosted at another hospital site must ensure that the links to the centre are supported by:

- A clear governance, leadership and accountability arrangement in place for the service that is agreed by both parties;
- A single integrated and coordinated treatment planning team that is electronically connected for planning activities for image capture, treatment planning, radiotherapy prescription and clinical record and treatment delivery quality assurance;
- Common Service User information and consent process; the same research governance, equal access to studies and adequate trial support infrastructure; common training of staff / CPD process; adequate staffing and recruitment; and
- The service should be set up to support compliance with the NICE IOG for all cancer services, and fulfil / participate in membership of the relevant multi-disciplinary teams as required.

It is imperative that all radiotherapy services are compliant with the current (2017) Ionising Radiation Medical Physics (Medical Exposure) Regulations (IR(ME)R) in England and any subsequent amendments or updates. IR(ME)R 2017 is intended to protect the Service User from the dangers of ionising radiation and lays out requirements of the employer and individuals in registered roles. The Care Quality Commission as the enforcing body has both the power to serve enforcement notices and the power to prosecute under criminal law those breaches that constitute criminal offences. IR(ME)R 2017 mandates locally appointed Medical Physics Experts (MPEs) to advise employers on compliance with the legislation.

2.5 Clinical Requirements to Support Partnership Working.

It is recognised that not all radiotherapy services will be able to meet the core standards, outlined in section 2.4 above, particularly in relation to treating some radical treatments for less common and rare cancers (Appendix A). It is also recognised that maintaining local access for Service Users to services is important to overall experience of care and may, potentially, for some Service Users be a factor in agreeing overall choice of treatment.

The combination of partnership working between neighbouring centres together with the adoption of electronic networking solutions now offers far-reaching opportunities for ambitious change to create resilient and sustainable radiotherapy services and put an end to isolated, single-handed practice. This approach will also enable sufficient activity throughput to promote clinical expertise in tumour site specific management to guide treatment choice, treatment planning and eligibility for clinical trial participation.

Where it is established, following Network Oversight Group review of service configuration, that any of the standards, or core service requirements cannot be met by an individual provider, and in order to preserve local access to treatment, it is contingent on providers to develop effective integrated clinical team arrangements with a neighbouring centre(s) covering the scope of cancer sites where minimum numbers are not met and / or there is a single handed Consultant Clinical Oncologist.

This means that the subspecialist teams must work together to create a single integrated team across two (or more) provider sites with routine treatment delivery to some uncommon cancers at the two (or more) sites where combined case numbers should exceed 100 (or more).

Treatment planning can either be undertaken locally, should robust arrangements between the planning teams of the partnering providers be in place, or undertaken by one of the providers and transferred electronically to the second centre, for local treatment delivery.

The local availability of tumour site-specific multi-professional support teams and effective and explicit clinical cross-cover as part of a robust partnership with neighbouring centres is essential. A mitigation plan to support continued local delivery must be developed and agreed by the two (or more) providers and the Network Oversight Group. This must include consideration of the following:

- Use of Network-wide standard tumour specific treatment protocols;
- Use of electronic networking solutions to facilitate the development of a joint planning team approaches;
- Participation in larger specialist MDTs, hosted by other providers in the Network that are compliant with sub-specialisation requirements;
- Workforce cross-cover arrangements; and
- IT infrastructure solutions including data sharing agreements.

In all cases, it is required that there is regular benchmarking and audit of agreed quality indicator metrics in order to evidence that treatments delivered are safe and that quality assurance audits are comparable to other providers within the Network. The review of data must be undertaken by the Network Oversight Group or other independent team, as nominated by the relevant Specialised Commissioning team. Where data evidences that service quality is not comparable, further mitigations will be required of the provider concerned, up to and including a cessation of service for specific tumour types.

2.6 Clinical and Service User Pathways

It is the responsibility of all the radiotherapy providers to prevent and minimise late effects through better targeted treatments, provision of information and the management of acute side effects. The vast majority of people that develop late effects following radiotherapy treatment should be managed locally as an integral part of rehabilitation or as part of locally stratified follow-up care pathways. These should include options for referral to local specialties / services that have expertise to manage more common late effects. However, it is expected that specialist late effects centres will manage and co-ordinate the provision of specialist services for complex late effects of cancer treatments, and align to specialist cancer surgery and other treatment pathways as they arise. Clinical guidance on long-term effects is available via www.macmillan.org.uk/cot

Assessment and Referral

The Provider must have clear documented pathways for each cancer treated that show:

- The process for ensuring that each case is reviewed by an appropriate specialist MDT which make the decision about the most appropriate treatment
- Where in each care pathway the role of radiotherapy starts and finishes
- The process for ensuring that the pathway is seamless and has no avoidable delays; and
- The process and pathway for Service User follow up after treatment.

Each provider must have systems and processes in place to:

- Register Service Users;
- Collect relevant clinical and administrative data;

- Manage the appointment process, (reappointment and Did Not Attend (DNA) process if appropriate);
- Provide an appropriate range of information to Service Users which supports informed consent; and
- Undertake initial assessment in the appropriate location as agreed.

During the consenting process, which must be run in accordance with relevant guidelines and legislation, it will be important for each Oncologist to:

- Discuss the full and optimum range of treatment options, including clinical trials, recommended by the MDT for each Service User; and
- Provide details of where the treatments are available within the Network, together with information about travel, transport and any available accommodation options.

Where a Provider wishes to treat teenagers and young adults (TYA) with radiotherapy, they must be part of an established Principal Treatment Centre in England and thus have direct access to the mandatory age specific support services and a TYA MDT.

Radiotherapy Treatment and Planning

Following discussion at an MDT, the Provider shall ensure that;

- Service Users accepted for radiotherapy treatment will be seen by a clinician who is a core member of that MDT and who is able to deliver radiotherapy treatment. This clinician will discuss with the Service User their condition, their treatment options, the rationale for treatment and will plan and supervise the treatment;
- Treatment with Radiotherapy should be delivered in line with the Joint Collegiate Clinical Oncology guidelines (published, 1999);
- Service Users will be provided with a full management plan. The plan will clearly indicate the overall management and the role of radiotherapy. All Service Users will be provided with detailed condition specific information booklets and furnished with relevant website addresses during informal counselling. Service Users will have access to a specialist nurse or keyworker throughout the referral and treatment process. On agreement of a management plan which includes radiotherapy treatment, the Provider must ensure that the Service User's consent is formally documented;
- Tumour specific treatment protocols will ensure that target definition is performed by an appropriate subspecialist oncologist before a treatment plan is created. The radiation dose and treatment plan will be approved or countersigned by an appropriately trained and accredited practitioner and all practices compliant with Ionising Radiation (Medical Exposure) Regulations (IRMER) 2017;
- A method which is independent of the planning computer and independent of the person producing the computer generated plan will be in place for checking the monitor unit calculation/treatment times, *Towards Safer Radiotherapy (Royal College of Radiologists et al, 2008)*;
- The Service User receives appropriate care during the intervention(s), including on treatment review and support, in accordance with best clinical practice;
- Where clinical emergencies or complications do occur they are managed in accordance with best clinical practice;
- The intervention is carried out in a facility which provides a safe environment of care and minimises risks to Service Users, staff and visitors;
- The intervention is undertaken by staff with the necessary qualifications, skills, experience and competence;
- There are arrangements for the management of out of hours care according to best clinical practice and monitored via a local recording system;

- Where any radiotherapy is used concurrently with other treatments (such as brachytherapy or chemotherapy), it must be integrated appropriately and scheduled to meet the needs of the Service User;
- Any untoward incidents and near misses should be reported using the national reporting tool;
- Contact with the wider cancer MDT (Specialist therapeutic radiographer, Clinical Nurse Specialist [CNS], Dietician etc.) must be encouraged as supporting Service Users during and after radiotherapy is essential. Clinical review of each Service User's daily treatment is the responsibility of the registered therapeutic radiographer delivering the treatment, additionally regular formal review will involve a broader team approach;
- Irrespective of where the outlining occurs (i.e. base or distant hospital) all relevant information must be available to the oncologist at the time of volume definition including appropriate diagnostic imaging, clinical letters, operation notes, clinical photographs, endoscopy reports. This same data must be made available for effective peer review of target volumes which itself may be conducted on site or remotely through an effective IT infrastructure. <https://www.rcr.ac.uk/publication/RT-target-definition-peer-review>; and
- Every effort should be made to offer Service Users their preferred treatment time, not to rearrange or cancel appointments unnecessarily and to limit the time that Service Users have to wait for their appointment, in accordance with the NHS Constitution and other appropriate NHS policies.

Post Treatment Follow up

Follow up recommendations to the referring physician(s) should include condition specific information and be tailored to individual Service User's needs, preferences and circumstances. However, the ultimate follow up plan will usually be the responsibility of the MDT and oncology team and subject to alterations according to clinical needs including the management of late effects and survivorship. Follow-up arrangements may depend on the clinical indication for radiotherapy, clinical features of the case and local geography.

The provider must have systems and processes in place, which ensure the following:

- Telephone triage as appropriate;
- Urgent onward referrals where life-threatening conditions or serious unexpected events occur during an intervention/assessment;
- Service Users receive end of treatment information relevant to their intervention including arrangements for contacting the provider and follow up if required;
- Timely feedback to the referrer and primary care re intervention, complications and proposed follow up;
- Service Users receive the required drugs/dressings/aids if applicable;
- Support is in place with other care agencies including the voluntary sector; and
- Provide General Practitioners (GPs) and Service Users with treatment summaries monitored through a local recording system. Guidance on treatment summaries can be found at:

<http://www.macmillan.org.uk/about-us/health-professionals/programmes-and-services/recovery-package#297725>

2.7 Service User and Carer Information

For all people receiving radiotherapy, there must be written information, supplementary to that on any general consent form, which as a minimum includes:

- Service User related aspects of radiotherapy treatment in general and specific to the anatomical sites treated and modalities used in the department; and
- Include acute and late effects of treatment.

Access to support and information out of hours by telephone must be available.

Information about travel arrangements (including how to claim costs, if eligible) and whether accommodation can be provided must be provided.

2.8 Service User Reported Outcomes

NHS England plans to radically improve care and support for people once treatment ends. The Cancer Quality of Life metric is in its pilot phase and it is expected that service will implement the metric as part of any national implementation programme. The new 'quality of life metric' will use questionnaires to measure how effective this support is and the data will be made available on My NHS – helping Service Users, the public, clinicians and health service providers see how well their local after cancer care support is doing.

<https://www.england.nhs.uk/2017/09/new-quality-of-life-measure-for-recovering-cancer-patients>

In addition, all services must consider the routine use of the ALERT-B screening tool in appropriate Service Users to assess the late-effects of radiotherapy to the bowel to identify people who should be offered referral to a specialist in managing chronic gastrointestinal symptoms after pelvic radiotherapy.

[http://www.clinicaloncologyonline.net/article/S0936-6555\(16\)30122-4/fulltext](http://www.clinicaloncologyonline.net/article/S0936-6555(16)30122-4/fulltext)

2.9 Access to Radiotherapy

The Network Oversight Group, in conjunction with the relevant specialised commissioning team and the Cancer Alliance(s), is required to review service provision on a regular basis to ensure optimal access arrangements are in place across the Network. This applies to proposals relating to sub-specialisation or the expansion and / or reprovision of an existing service or the development of satellite service facilities, because such facilities will need to demonstrate effective equipment utilisation and financial viability.

Changes may have an impact on overall Network activity flows, and, potentially, cross network flows, service sustainability and workforce. Therefore, any proposals to alter access must be approved by individual providers, Cancer Alliance and Specialised Commissioners and may be subject to public involvement duties.

The development of any new service locations, i.e., satellite services, requires the development of a provider business case which demonstrates an existing differential access rate to radiotherapy for the relevant population, the capacity required to meet current activity levels for that population, machine utilisation and proposed efficiencies, together with an assessment of the impact of this re-provision on existing cancer pathways, both within and outside the Network geography. See section 3.2.

To ensure integration of care, any proposed radiotherapy satellite service to be located at a hospital site on the boundary of a network with existing cancer pathways to an oncology service outside the network should only be associated with one radiotherapy provider. The treatment and care of Service Users should be managed by clinical oncologists from the provider delivering services at the satellite facility.

In developing proposals for the configuration of the Service, the Network Oversight Group must consider access arrangements across the Network, including the availability of Service User accommodation. It is recognised that Service User accommodation is not within the scope of NHS services. However, it is the case that many providers already have arrangements in place with the charitable sector for the provision of accommodation. The Specification seeks to encourage the further development of such arrangements and their application to radiotherapy services.

Stereotactic Ablative Radiotherapy (SABR) is currently restricted to a limited number of centres in England whilst evidence of clinical effectiveness emerges. This will be continually reviewed by NHS England's national specialised commissioning team. It is expected that, as Networks become established, they will have a key role in developing SABR services, as clinical partnerships evolve and clinical evidence emerges. This will be balanced with ensuring that services deliver SABR treatments as described within the NHS England clinical commissioning policies and that the required standards and minimum case numbers per year is achieved.

2.10 Management of Cancer Waiting Times

A number of waiting time performance measures govern the delivery of cancer services including radiotherapy. These are set out within NHS Standard Contract.

Guidelines for the Management of the Unscheduled Interruption or Prolongation of a Radical Course of Radiotherapy (RCR, 2012) recommend that during machine breakdowns, "category 1" treatments (radical treatments for lung, oesophagus, bladder, squamous cell carcinoma of head and neck and cervix cancers) must not be disrupted or delayed. It is particularly important not to delay the commencement of radiotherapy. Each provider should aim to treat category 1 Service Users within seventeen days from date of decision to treat with radiotherapy to date of commencement i.e., the fourteen days recommended by the Joint Collegiate Council for Oncology (JCCO, 1993) with the flexibility of an additional weekend if it is planned to commence treatment on a Monday).

Each provider is required to develop and agree robust contingency plan(s) to ensure that these standards are adhered to. Each Provider is also required to contribute to the development and agreement of a Network-wide plan to harness the strength of the Network such that the clinical management of Service Users during periods of staff shortage and machine maintenance and breakdown is minimised. In addition, each provider must have robust cover arrangements for absence and holidays, out of hours and emergencies in place to ensure continuity of service. Networks must also agree contingency arrangements to ensure services are sustained at all locations within the Network during periods of long absences.

2.11 Workforce

The radiotherapy service must have clinical oversight and accountability for governance purposes. There must be a professional head of the radiotherapy service directly responsible for the development, management and ultimate clinical accountability and responsibility for the service. In addition, there must be a Radiotherapy services manager who will normally be registered with the Health and Care Professions Council (HCPC).

The radiotherapy workforce is experiencing a significant shortage of key staff groups, such as Medical Physicists. It is therefore considered that different approaches to the way services are organised are needed and considered vital to consolidate the existing knowledge and expertise so that learning is shared at pace and at scale to benefit every

Service User, helping to make services sustainable and resilient. Providers must ensure that;

- The workforce is registered with an appropriate regulatory body (i.e. therapeutic radiographers, medical physicists, oncologists, clinical technologists, dosimetrists and other support and administrative staff) has the minimum levels of experience, qualifications, staff development and competencies appropriate to their role;
- The most appropriate staffing and skills mix is agreed;
- The workforce profiles are guided by the professional body staffing recommendations;
- Staff contribute to, agree and implement a network radiotherapy workforce sustainability strategy and takes forward actions to address the impact of service change, contingency planning arrangements, capacity and demand planning, innovative approaches to recruitment and retention and the roll-out of national priorities;
- Staff are supported through the process of change as partnership approaches are developed particularly where services are configured to create integrated, multi-professional teams across two neighbouring centres;
- There is strong clinical leadership in all professional groups able to create effective partnerships to drive and support staff through these changes;
- Professional groups seek opportunities for promoting innovation in ways of working across disciplines and locations as well as multi-professional approaches to skill mix. This must include any associated training and development opportunities for individuals from all constituent radiotherapy departments forming the Network to support staff retention and development;
- Appropriate education and continuing education of radiotherapy professionals is given a high priority to ensure the introduction of new treatment techniques and technologies;
- Training plans are developed in line with network priorities and should include quality assurance, treatment planning, treatment delivery and verification technologies and techniques. Safety considerations must also be included in the training for these new techniques; and
- Shared technology approaches for treatment planning systems and licences across multiple providers (as beam data is universal), fibre-optic links, VTC capabilities and opportunities to share resources between providers are explored and implemented in order to meet the core requirements of the service specification.

Changes to the workforce profiles should be guided by both professional body guidance and national government policy in order to explore opportunities for changing skills mix and making the best use of the workforce skills:

<https://www.hee.nhs.uk/sites/default/files/documents/Multi-professional%20framework%20for%20advanced%20clinical%20practice%20in%20England.pdf>

The training of professionals must involve the 'normal' and 'unusual' circumstances likely to occur in the radiotherapy process. Services in the Network must contribute to understanding the impact of new and changing treatments and regimens in order to play into the planning assumptions of the future. The providers should consider the findings of the Cancer Research UK report and other national publications when developing their radiotherapy workforce strategies and plans:

https://www.cancerresearchuk.org/sites/default/files/full_team_ahead-full_report.pdf
<https://www.rcr.ac.uk/publication/clinical-oncology-uk-workforce-census-2015-report>

2.12 Interdependence with Other Services

The networked model requires that radiotherapy is part of a fully integrated non-surgical oncology service that is shaped to support the range of co-located cancer services and MDTs locally and associated multi-professional teams.

3. Population Covered and Population Needs

3.1 Population Covered by the Specification

The Service outlined in this Specification are for patients resident in England*, or otherwise the commissioning responsibility of the NHS in England (as defined in Who Pays?, Establishing the responsible commissioner and other Department of Health guidance relating to Patients entitled to NHS care or exempt from charges).

*Note: for the purposes of commissioning health services, this EXCLUDES Patients who, whilst resident in England, are registered with a GP Practice in Wales, but INCLUDES Patients resident in Wales who are registered with a GP Practice in England.

3.2 Population Needs

It is anticipated that a number of factors will have a significant impact on future linac capacity. Approximately 40% of people treated for cancer in the NHS in England currently receive radiotherapy (External Beam Radiotherapy and Brachytherapy) as part of their cancer treatment. Improvements in early diagnosis will mean more people will require access to treatments that offer them the best outcome. This is particularly important at a time of changing clinical practice in radiotherapy and when considering the range of treatment options available for the same condition: chemotherapy, radiotherapy (External Beam Radiotherapy and Brachytherapy), surgery and other types of radiotherapy including Proton Beam Therapy, Stereotactic Radiosurgery / Radiotherapy and Molecular Radiotherapy.

“It is essential that planning for improvements in, and provision of, these cancer treatments does not consider them in isolation. Modern practice requires an integrated approach to treatment and care”. *Achieving world class cancer outcomes (NHS England, Public Health England 2015)*.

A capacity planning exercise in England modelled radiotherapy activity levels over a 5 year period and assumed 1%- 2% increase in referrals to radiotherapy per year, in line with cancer incidence. In practice, this level of growth is unprecedented and remains relatively stable.

The impact of changes in clinical practice, efficient technology and greater flexibility in service availability will significantly affect radiotherapy capacity requirements over the next 5 years. This is particularly important as in general, the average number of fractions associated with an episode of care is likely to reduce.

In addition, technology and clinical practice is changing to include;

- A trend of reducing fractionation;
- Treatment imaging in line with emerging evidence;
- Capitalising on equipment efficiencies that are associated with new equipment;
- Equity of access to advanced radiotherapy; and

- Developing access to innovative radiotherapy using new and emerging evidence based technologies.

All these factors should be carefully considered when developing or approving business case for service expansion.

4. Outcomes and Applicable Quality Standards

4.1 Quality Statement – Aim of Service

NHS England's aim is to turn the ambition for the Services set out within the Report of the Independent Cancer Taskforce and the Vision for Radiotherapy publications into a reality. This will mean that people who require radiotherapy treatment will have access to high quality, safe and efficient services, regardless of where they live.

The Specification is designed to improve outcomes, reduce variation in quality and enable access to the appropriate team of experts able to deliver the full range of cancer specific clinical care, clinical trials and advanced radiotherapy technologies.

The Specification aims to:

- Ensure that clinically effective and economically efficient reconfigured clinical and service models for the provision of radiotherapy services are developed to achieve improved outcomes for Service Users;
- Ensure optimum and geographically equitable access to innovative radiotherapy treatments delivered in a clinically coherent and cost-effective configuration;
- Improve life expectancy and quality of life for Service Users that meet the requirements of the national commissioning policies for radiotherapy treatments;
- Ensure Service Users have equitable access to high quality innovative radiotherapy treatment and care appropriate to the condition treated. Evidence suggests that approximately 40% of people with cancer should receive external beam radiotherapy as part of their cancer treatment; and
- Ensure the quality and safety of radiotherapy services delivered to a consistently high standard in England through comparative audit and quality assurance to reduce variation in clinical practice.

In addition, the Specification requires that:

- Information included in the mandated national radiotherapy dataset (RTDS) must be collected and submitted according to national requirements;
- Each department must have robust mechanisms in place for monitoring treatment outcomes;
- The delivery of accurate treatment is the responsibility of all staff and each department must develop a safety-conscious culture as demonstrated by reporting to the national reporting and learning service (NRLS);
- Service Users and staff should be encouraged to question and raise concerns to which the provider is required to respond; and
- Commissioners should be informed of clinically significant errors reported to Service Users as reported under the IR(ME)R 2017.

IR(ME)R 2017 does not restrict radiotherapy practices but rather requires that individual patient exposures are justified and optimised. It is imperative that roles and responsibilities are clearly set out in procedures and that everyone understands their roles. Where IR(ME)R 2017 refers to the employer this can be taken to be the chief executive of the NHS Trust and

the Trust, on behalf of the chief executive, should appoint one or more Radiotherapy MPEs to advise on compliance. There should be clear lines of delegated authority from the employer to the professional leads and individual duty holders but it should be remembered that responsibility rests with the duty holders and cannot be delegated.

The employer must have a system for analysis and notification of exposure errors and this must include a process for embedding lessons learned into daily practice. The publication “Towards Safer radiotherapy” (*Royal College of Radiologists et al, 2008*) includes an incident classification system which is updated in PHE’s 2016 publication: “Development of learning from radiotherapy errors”

(https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/579541/DL_guidance_finalNB211216.pdf).

This pathway, incident and causative classification and coding system must be used to aid the sharing of information and learning between centres through the NRLS.

NHS Outcomes Framework Domains

Domain 1	Preventing people from dying prematurely	✓
Domain 2	Enhancing quality of life for people with long-term conditions	✓
Domain 3	Helping people to recover from episodes of ill-health or following injury	✓
Domain 4	Ensuring people have a positive experience of care	✓
Domain 5	Treating and caring for people in safe environment and protecting them from avoidable harm	✓

4.2 Indicators

Number	Indicator	Data Source	Outcome Framework Domain
Clinical Outcomes			
101	Radiotherapy waiting times to start of treatment.	RTDS	1,2,3,5
102	Number of Service Users receiving radical treatment by tumour site.	RTDS	1,2,3,5
103	Proportion of all Radiotherapy Radical Episodes receiving Inverse Planned intensity modulated radiotherapy (IMRT) (excluding breast).	RTDS	1,2,3,5
104	Proportion of radical cases treated using image guidance – to be defined.	Provider	1,2,3,5
105	Mean time to treatment for category 1 Service Users.	RTDS	1,2,3,5

106	Proportion of Service Users for whom radiotherapy is indicated as part of treatment for breast cancer (after primary surgery) greater or equal 15 fractions (excluding any boost). See NHS England clinical commissioning policy.	RTDS	1,2,3,5	effecti
107	Proportion of metastatic bone radiotherapy episodes greater or equal to a single fraction of external beam radiotherapy. See NHS England clinical commissioning policy.	RTDS	1,2,3,5	effecti
108	Proportion of prostate cancer cases requiring radical external beam radiotherapy greater or equal to 20 fractions of treatment. See NHS England clinical commissioning policy.	RTDS	1,2,3,5	effecti
109	Percentage of Service Users recruited to trials.	NCRI / CRUK	1,2,3,5	effecti
110	30 day mortality after radiotherapy (adult palliative cases only excl. MSCC).	RTDS	1,2,3,5	effecti
111	90 day mortality after radical radiotherapy (adults)			
112	Departmental average number of fractions per linac.	RTDS	1,2,3,5	effecti
Service User Experience				
201	There is radiotherapy Service User information specific to the treatment of each of the individual tumour subsites.	Self declaration	4	caring
202	The service has undertaken an exercise to gain feedback from Service Users.	Self declaration	4	caring
203	ALERT-B screening tool is in use.	Self declaration	4	caring
Structure and Process				
001	The RT service has a signed MOU. This must be contractually underpinned, as a minimum, by a Network-wide MOU and inter-provider agreements.	Self declaration	1,2,3,5	effecti
002	There is a Network Oversight Group.	Self declaration	1,2,3,5	Well le effecti

003	There is a defined provider organisational structure and head of service.	Self declaration	1,2,3,5	Well le effecti
004	There is a multiprofessional governance group.	Self declaration	1,2,3,5	Well le effecti
005	There are a minimum of two clinical oncologists for each tumour site. If not, a mitigations plan has been developed and implemented.	Self declaration	1,2,3,5	Safe e
006	The service has an agreed implementation plan aligned to the network workforce strategy	Self declaration	1,2,3,5	Safe e
007	There is a training strategy.	Self declaration	1,2,3,5	Safe e
008	There is a quality management system.	Self declaration	1,2,3,5	Safe e
009	There is a network wide quality assurance programme.	Self declaration	1,2,3,5	Safe e
010	There is a policy for error classification and reporting.	Self declaration	1,2,3,5	Safe e
011	There is a policy in place for the management of interruptions.	Self declaration	1,2,3,5	Safe e
012	The service has access to modern radiotherapy equipment	Self declaration	1,2,3,5	Safe e
013	There is an agreed equipment replacement programme.	Self declaration	1,2,3,5	Safe e
014	There is a network agreed out of hours treatment policy.	Self declaration	1,2,3,5	Safe e
015	There are agreed protocols for treatment planning checks.	Self declaration	1,2,3,5	Safe e
016	There are network agreed protocols in place.	Self declaration	1,2,3,5	Safe e
017	Provider has standard operating procedures in place.	Self declaration	1,2,3,5	Safe e
018	There are network agreed treatment planning protocols.	Self declaration	1,2,3,5	Safe e

4.3 Prospective Radiotherapy Data Collection

Routine data collection and submission to the Radiotherapy Dataset is mandatory as part of the NHS Standard Contract. However, it is also expected that the clinical teams will have streamlined processes in place to routinely collect and analyse meaningful clinical outcome data. Consequently, the most value is likely to be derived from data using the following principles:

1. Definitive treatments with radiotherapy +/- systemic treatment (not palliative or adjuvant/post-op)
2. Meaningful number of assessable events including loco-regional relapse, death from disease and late effects
3. Protocol driven follow up of Service Users by the clinical oncology team
4. There should be agreement by national expert site-specific groups as to the dataset collected to ensure consistency including quality of life indicators.

It is recommended that prospective data collection is rolled out by first using category 1 Service Users including all lung and oesophagus radical radiotherapy (no planned surgery) as well as squamous cell carcinoma (SCC), head and neck, cervix, vulva, vagina, anus. Data must be triangulated with RTDS and other national tumour specific datasets. Each provider should take organisational and financial responsibility for providing Service User outcome data.

If practitioners are treating these category 1 conditions they will wish to know their outcomes both in terms of tumour control as well as toxicity; this local information is then available to Service Users for discussion of treatment options and likely outcomes during the informed consent process.

There is the potential for amalgamating outcomes data (collected consistently) at a national level to assess treatment effectiveness; Service User and tumour data, which could well impact on outcomes, need to be collected as well as the treatment details.

For example; head and neck cancer Service User data that is relevant to outcome includes age, gender, smoking status, weight loss, performance status and haemoglobin level; tumour data would include T and N stage, HPV status and histological grade; treatment data would include total radiotherapy dose, number of fractions and overall treatment time as well as brachytherapy and systemic therapy details.

RTDS should be exploited to its full extent to examine consistency of practice, promote innovation and generate hypotheses for radiotherapy research. Data from radiotherapy planning and delivery should be linked to detailed outcomes data collection where possible to underpin the ambition of personalised radiotherapy.

4.4 Policy Context

- Improving Outcomes; a Strategy for Cancer – Department of Health (2011) with updates to 2014;
- A Vision for Radiotherapy, 2014 – 2024;
- Five Year Forward View – NHS England (2014); and
- Report of the Independent Cancer Taskforce – ‘Achieving World-Class Cancer Outcomes: A Strategy for the NHS’ 2015-2020.

5. Designated Providers (if applicable)	
<i>To be completed at contract stage.</i>	
6. Terms, Abbreviations and Acronyms Explained	
4D Adaptive Radiotherapy	The ability to take account of the tumour position and shape in the three physical dimensions plus the fourth dimension of change with time.
Advanced Radiotherapy Techniques	Advanced radiotherapy techniques are already in clinical use in England. These include 4D Adaptive Radiotherapy and volumetric modulated arc therapy which is a type of intensity modulated radiotherapy (IMRT) involving shorter times on the treatment couch, meaning less scope for target movement as well as higher throughput and efficiency and improved Service User experience.
Arc therapy	A type of IMRT involving shorter treatment times, meaning less scope for target movement as well as higher throughput and efficiency.
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.
Brachytherapy	The delivery of radiation using sealed sources which are placed close to the site that is to be treated. Isotopes used in brachytherapy can be applied directly to the tumour by surface applicators, inserted into body cavities and tubular organs via specially designed delivery systems (intracavitary and intraluminal therapy) or inserted directly into a tumour (interstitial therapy).
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.
Clinical Reference Groups (CRG)	A group consisting of clinicians, commissioners and Patient and Public Voice 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 activity 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 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.
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 (IMRT)	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 Service User'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 benefit which are not currently in mainstream clinical use in England but have the potential to become available in the next few years e.g. MRI treatment planning and delivery. To be considered as demonstrable evidence of benefit emerges and agreement of NHS England commissioning positions.
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 Service Users.
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.
Molecular radiotherapy	The treatment of disease with radiopharmaceuticals. As with external beam radiotherapy, MRT offers the advantage of delivering high radiation doses to a specific target and sparing healthy organs from serious side effects.
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 cases.
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.
Radiotherapy Dataset (RTDS)	Radiotherapy Data Set is a mandatory requirement of all NHS England commissioned 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.
Sustainability and Transformation Partnership (STP)	NHS England teams 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 Service Users.

Appendix A

Radical radiotherapy is used to cure an illness for example by destroying a tumour. There are many types of cancer often referred to as common cancers, less common cancers and rare cancers.

Table 1 Types of Cancer treated with Radical Radiotherapy

Common Cancers	1. radical (standard) breast 2. radical prostate/bladder 3. radical rectum 4. radical lung
Less common cancers	5 Head and neck 6 Gynaecological 7 Upper GI (oesophagus; Hepatic pancreatic biliary (HPB) 8 Primary CNS
Rare cancers	9 Paediatric cancers (separate specification under development) 10 Sarcoma (soft tissue) 11 Anal (could be integrated with colorectal cases) 12 Penile 13 Rare head and neck (sinus, nasopharynx)

Appendix B - References

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Appendix C - Radiotherapy Networks

Each Network is based on a defined geographical population footprint of between 3-7million, aligned to Cancer Alliance(s) and will be formed of multiple radiotherapy providers. Each Network includes at least one large tertiary centre sufficiently sized to provide a comprehensive cancer service, including the full range of radiotherapy treatments, in all subspecialist areas including, rare cancer specialist MDTs (sarcoma, neuro-oncology, paediatric oncology, hepatobiliary and pancreatic cancers etc.) and in line with tumour specific Improving Outcomes Guidance (IOG).

The configuration of each Network cannot be altered without the written consent of NHS England.

RADIO THERAPY NETWORK PARTNERSHIPS	CANCER ALLIANCES
Brighton and Sussex University Hospitals NHS Trust Imperial College Healthcare NHS Trust Royal Surrey County Hospital NHS Foundation Trust The Royal Marsden NHS Foundation Trust	North West and South West London Surrey and Sussex
Barking, Havering and Redbridge University Hospitals NHS Trust Barts Health NHS Trust East and North Hertfordshire NHS Trust North Middlesex University Hospital NHS Trust Royal Free London NHS Foundation Trust University College London Hospitals NHS Foundation Trust	North Central and North East London
Guy's and St Thomas' NHS Foundation Trust Maidstone and Tunbridge Wells NHS Trust	South East London Kent and Medway
Gloucestershire Hospitals NHS Foundation Trust Plymouth Hospitals NHS Trust Royal Devon and Exeter NHS Foundation Trust Royal Cornwall Hospitals NHS Trust Royal United Hospitals Bath NHS Foundation Trust Taunton and Somerset NHS Foundation Trust Torbay and South Devon NHS Foundation Trust University Hospitals Bristol NHS Foundation Trust	Peninsula Somerset, Wiltshire, Avon and Gloucestershire
Hampshire Hospitals NHS Foundation Trust Oxford University Hospitals NHS Foundation Trust Royal Berkshire NHS Foundation Trust	Thames Valley Wessex

<p>Poole Hospital NHS Foundation Trust Portsmouth Hospitals NHS Trust University Hospital Southampton NHS Foundation Trust</p>	
<p>Cambridge University Hospitals NHS Foundation Trust Colchester Hospital University NHS Foundation Trust Ipswich Hospital NHS Trust Norfolk and Norwich University Hospitals NHS Foundation Trust North West Anglia NHS Trust Southend University Hospital NHS Foundation Trust</p>	<p>East of England</p>
<p>Derby Teaching Hospitals NHS Foundation Trust Northampton General Hospital NHS Trust Nottingham University Hospitals NHS Trust United Lincolnshire Hospitals NHS Trust University Hospitals Of Leicester NHS Trust</p>	<p>East Midlands</p>
<p>Royal Wolverhampton Hospitals NHS Trust Shrewsbury and Telford Hospital NHS Trust University Hospitals Birmingham NHS Foundation Trust University Hospitals Coventry and Warwickshire NHS Trust University Hospitals of North Midlands NHS Trust Worcestershire Acute Hospitals NHS Trust</p>	<p>West Midlands</p>
<p>Lancashire Teaching Hospitals NHS Foundation Trust The Christie NHS Foundation Trust The Clatterbridge Cancer Centre NHS Foundation Trust</p>	<p>Lancashire and South Cumbria Greater Manchester Cheshire and Merseyside</p>
<p>Hull and East Yorkshire Hospitals NHS Trust Leeds Teaching Hospitals NHS Trust Sheffield Teaching Hospitals NHS Foundation Trust</p>	<p>Humber, Coast and Vale West Yorkshire South Yorkshire, Bassetlaw, North Derbyshire and Hardwick</p>
<p>North Cumbria University Hospitals NHS Trust South Tees Hospitals NHS Foundation Trust The Newcastle Upon Tyne Hospitals NHS Foundation Trust</p>	<p>North East and Cumbria</p>

Appendix D – Network sub-specialist arrangements

To be confirmed with Networks.

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