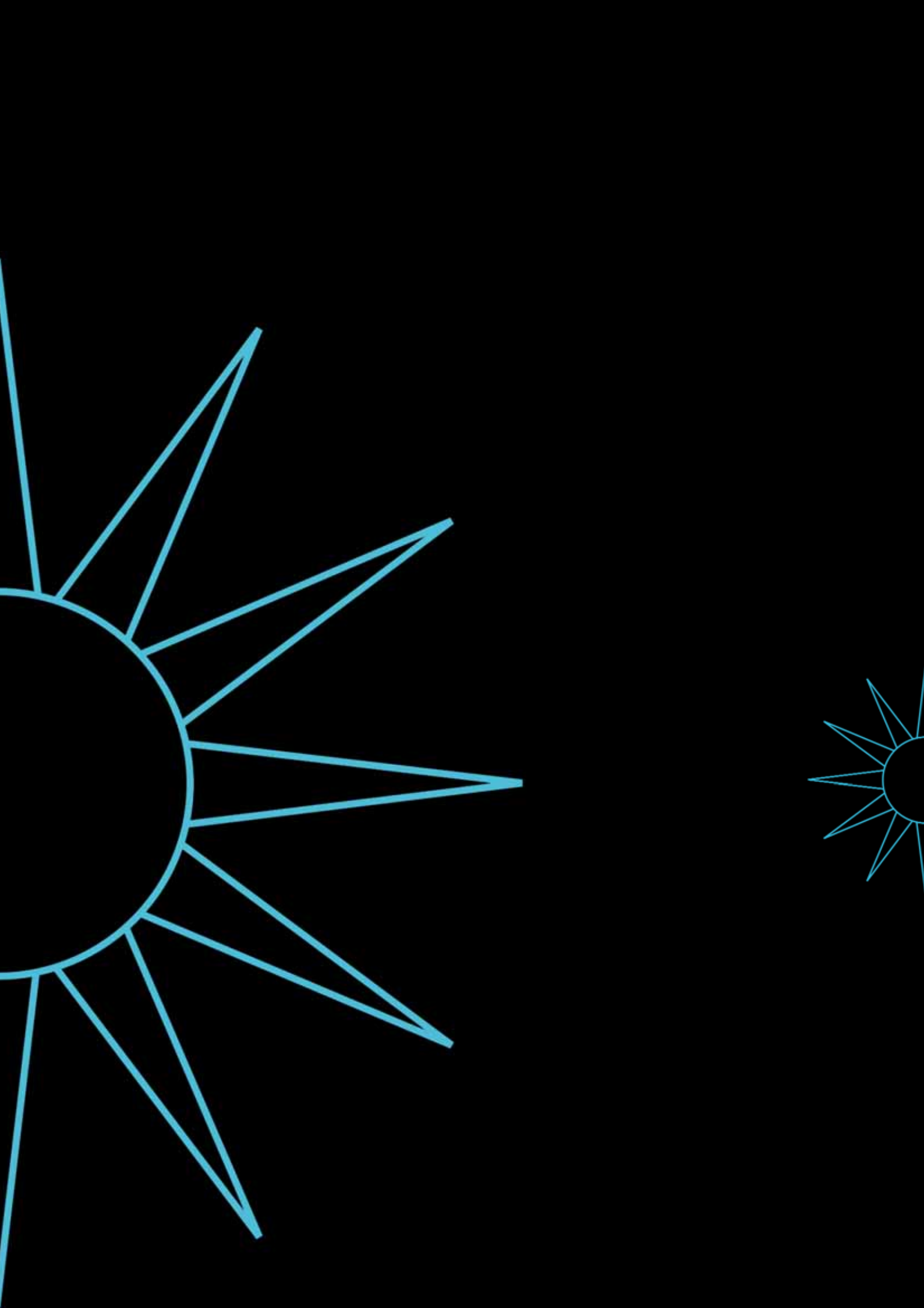
THE COLLEGE OF RADIOGRAPHERS

RADIOTHERAPY

Radiographic Staffing: Short Term Guidance

2005 Benchmark for Standard Core Functions within Radiotherapy

THE SOCIETY OF RADIOGRAPHERS



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Radiographic Staffing: Short Term Guidance 2005 Benchmark for Standard Core Functions within Radiotherapy

College of Radiographers' Responsible Officer:
Charlotte Beardmore

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The Society of Radiographers
207 Providence Square
Mill Street
London SE1 2EW

Telephone 020 7740 7200
Facsimile: 020 7740 7233
E-mail: info@sor.org
Website: www.sor.org

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Preface

In response to the work of the Department of Health National Radiotherapy Advisory Group (DH NRAG) and to assist with commissioning fully functional services in radiotherapy and oncology, an urgent need has arisen for a benchmark staffing establishment figure within radiotherapy and oncology services. Recent developments, for example the provision of additional equipment to support the National Cancer Plan, have exacerbated a chronic shortage of therapeutic radiographers[1,2].

It is likely that the DH NRAG will recommend that a further significant increase in radiotherapy capacity is required within England to deliver present and future service need. A similar recommendation is likely for Scotland. In anticipation of these recommendations, the Society and College of Radiographers has produced two important documents, as follows:

- Radiographic Staffing: Short Term Guidance
- Positioning Therapeutic Radiographers within Cancer Care: Delivering Patient Centred Care[3]

Within this first document is a benchmarking figure to assist managers locally in reaching a baseline-staffing number. Once this baseline has been established locally, the Society & College believes that more comprehensive staffing models, based upon greater skill mix, will then be able to be developed at the local level. It is anticipated that these models will be based upon skills mix across the entire radiotherapy workforce. In the longer term the baseline figure within the document may require adjustment to take account of these developments and the changing role that therapeutic radiographers will have within the service.

The second document describes re-focusing the expert skills of therapeutic radiographers around the needs of the patient and across the radiotherapy pathway. Indeed, many of these new roles for therapeutic radiographers are emerging currently in an ad-hoc manner, to meet locally identified clinical needs and this is being used to inform the developing DH NRAG workforce plans.

The Society and College of Radiographers sees it as essential that service managers consider the above documents jointly when developing medium and longer term staffing and career progression models for their service. Further, it believes it is essential that workforce requirements are projected only following collaboration with all other professional groups contributing to the radiotherapy and oncology workforce, and in line with plans that will emerge from DH NRAG. This will help to ensure that the service benefits fully from utilising the extensive skills of the whole workforce and particularly those of therapeutic radiographers. This is vital if the DH NRAG goal of developing a first class radiotherapy service, and the goals of achieving integrated cancer care for all patients across all pathways, are to be achieved.

Cautionary note

This document, describing the short term baseline staffing figure, offers guidance to radiotherapy and oncology service managers about staffing establishments required to deliver identified standard core services only. It is based on a survey undertaken in 2004 by the National Radiotherapy Managers group.

It does not attempt to include all aspects of the service which, whilst also key to radiotherapy and oncology services as a whole, may be managed by others from within the multidisciplinary team; for example, mould room, planning and dosimetry. Additionally, it does not attempt to take account of the impact of medium and longer term changes to skills mix and new roles, particularly those at advanced and consultant levels of radiographic practice which are evolving and will continue to evolve at local level. Extra staffing is likely to be required where posts are established to meet identified service need locally.

This document, therefore, can only offer short-term guidance and, as such, will need to be reviewed as the career progression framework for radiographers and the radiography workforce becomes fully embedded in service delivery, and new ways of working and changes to traditional skills mix have become the norm across the service. A revised document is anticipated for 2007.

1. Introduction

1.1 Radiotherapy is a key curative modality for cancer used either alone or in combination with surgery and/or chemotherapy. It also has an important role in symptom relief and palliation. It is recognised that approximately 50 per cent of all cancer patients may benefit from radiotherapy treatment[4,2].

1.2 The radiotherapy and oncology service is provided by multidisciplinary teams of professional staff, and relies critically on the skills of therapeutic radiographers. They organise and manage the radiotherapy and oncology service including referrals and access, waiting lists, and the co-ordination and delivery of treatment and related care. This demands a high level of technical expertise, and extensive knowledge of cancers, the specialist care needs of patients with cancer, and radiation physics, biology and safety. Therapeutic radiographers are registered with the Health Professions Council (HPC) and are the only professional group who are able to operate all radiotherapy equipment clinically. They are key to assuring that treatment is delivered accurately[5].

1.3 This document provides current baseline guidance for radiotherapy and oncology services managers on staffing establishments in terms of whole time equivalents (WTE), to deliver defined standard core services; ie those which are usually under the budgetary control of the radiotherapy manager.

1.4 It does not attempt to address the establishment needed to support changes and developments to roles which are essential if the goal of a first class cancer service is to be achieved.

2. Radiographer staffing

2.1 Background

2.1.1 Worldwide, there is very limited work detailing specific radiographer staffing levels for radiotherapy service delivery. This may be because, appropriately, staffing models have been developed locally to meet local service needs, so taking into account the respective skills of the various professionals within the team, and the often changing roles of those professionals as they develop their skills to meet evolving needs of services[6,7].

2.1.2 When comparing UK staffing levels with that of other countries, it should also be recognised that the skills of therapeutic radiographers vary considerably across the world, with some countries concentrating on developing skills for largely technical roles only. In such countries, doctors or physicists are required to be present to verify treatment set-up prior to treatment, in contrast to the UK where this is the responsibility of radiographers[5,7,8].

2.1.3 The unique role of the therapeutic radiographer is core to pre-treatment and treatment services within the UK, providing the key interface with all patients across the radiotherapy pathway. Therapeutic radiographers' skills are, therefore, critical across this pathway. They are responsible for ensuring accuracy within pre-treatment and that treatment is delivered as prescribed; that the treatment set-up is monitored throughout the course of treatment; and for the care, support and welfare of patients throughout their treatment. They are also responsible for referral to other members of the multi-disciplinary team (MDT) when this proves necessary. Together, these responsibilities require therapeutic radiographers to make daily assessments of all of their patients, and of all treatment parameters in relation to the patients and their conditions.

2.1.4 In the UK in 1999, the Society and College of Radiographers, in collaboration with the Royal College of Radiologists (RCR) and Institute of Physics and Engineering in Medicine (IPEM), published a staffing standards document to embrace changes to skills mix[9]. This document did not specify staffing numbers for the entire service as it was recognised there was evidence of re-configuration of the workforce taking place within the clinical setting, and that this approach would, undoubtedly, continue to secure a patient centred approach to service development and innovation. The document did, however, specify some minimum numbers for some aspects of the service and service managers were encouraged to identify locally the specific workforce requirements to meet their particular service needs. For therapeutic radiographers, the document moved away from the old model of numbers of radiographers required to deliver treatment on a Linear Accelerator in order to promote new roles and ways of working. The RCR and IPEM have, however, produced separate recommendations more recently, detailing their professional groups' current requirements in terms of staffing numbers[10,11].

2.1.5 In 2004, the National Radiotherapy Managers Group undertook some work around developing a staffing benchmark figure as they felt this was needed to sit alongside the recommendations of the RCR and IPEM. The guidance in this document is based on that work and should enable managers locally to reach a base line therapeutic radiography workforce figure from which future service models, based upon skills mix, could be built.

2.1.6 In 2004, the DH NRAG was established. This group required some immediate guidance on therapeutic radiography staffing for the core aspect of the service for which radiographers were responsible. The work of the National Radiotherapy Service Managers and this document provides that immediate guidance. A recommendation on therapeutic radiography workforce staffing numbers (including support staff) is included which should be helpful to the delivery of services currently. In the longer term, role development and skills mix will require this figure to be reviewed and it is unlikely to remain the same as therapeutic radiographers encompass a much wider range of roles, and as the profession's career progression framework (the 'four tier' structure) becomes embedded into service delivery models[8,12].

2.2 Standard core functions for radiotherapy and oncology services

2.2.1 The National Radiotherapy Managers Group, in developing a benchmark figure for radiography workforce staffing, agreed those core functions that would be included within the figure. These are listed below:

- Patient reception;
- Patient information and support throughout the treatment process;
- Treatment scheduling;
- Simulation for treatment;
- Treatment preparation, calculation, independent checking;
- Treatment delivery on linear accelerators and orthovoltage units, including routine patient support/information during treatment;
- On treatment checks;
- Quality assurance;
- Training functions;
- Management;
- Departmental administrative training.

2.2.2 The derived benchmark figure also allows for staff release necessary to implement standard service developments related to the continually evolving technology used in radiotherapy. Additionally, time is included in the figure for the normal management, leadership and continuing professional development (CPD) requirements necessary to underpin safe, effective and efficient radiotherapy services.

2.2.3 Clearly, however, not all core functions required to deliver a course of treatment for a patient are included. The following is a list of omitted functions for which additional staffing will be required. (It is not an exhaustive list.) These omitted services are essential for service delivery but may not be solely the domain of radiographers:

- Mould room;
- Volume delineation, physics planning and dosimetry;
- Brachytherapy;
- Quality management;
- On treatment review;
- Specialist radiographers providing information and support services;
- Site specialist radiographers;
- Research;
- New roles utilising expert practice at advanced and consultant levels related to technical experts, patient pathways and continuity roles[9].

2.3 The national radiotherapy managers' survey

2.3.1 In attempting to determine a benchmark figure that would be useful to all radiotherapy services managers, the UK National Radiotherapy Managers' Group agreed that any recommended guidance to be derived must take account of all the standard core activities undertaken as part of the therapy radiography service (see 2.2.1) and should not solely be based upon treatment delivery on linear accelerators. However, it was agreed that it might be useful to be able to link workforce requirements for the core service to the number of linear accelerators within a department and their planned operational hours. This should offer a more flexible tool for managers to use within their own centres. Accordingly, the UK Radiotherapy Managers' Group undertook a survey in 2003/2004, the aim of which was to determine whether there was any similarity in staffing across the departments within the UK from which a baseline figure could be derived.

2.3.2 Aims of the survey

- To establish whether commonality existed in establishment size in relation to actual services delivered, measured per linear accelerator hour and based on the standard core functions listed in 2.2.1 only.
- If commonality was demonstrated, to use the data to develop a model to define the WTE required for those core services in 2.2.1 (with additional services in figure 2.2.3, requiring additional staffing).

2.3.3 Survey method

2.3.3.1 The survey was UK wide and consisted of a detailed questionnaire which was circulated to all UK radiotherapy managers identified in the database of the Society and College of Radiographers. Follow up was made by telephone, as required, to refine and clarify the data.

2.3.3.2 The survey requested the following information:

- Numbers of staff contributing to the core services as per 2.1.1. and within the budgetary control of the radiotherapy services manager;
- Range of staff in terms of radiographers, assistants, helpers and administrative and clerical staff contributing to the core services listed in 2.1.1 and, again, within the budgetary control of the radiotherapy services manager;
- Departmental capacity, planned operational hours;
- Total activity within the department.

2.3.4 Survey findings

2.3.4.1 The survey findings were as follows:

- Responses were received from two thirds of the radiotherapy centres in the UK; ie from 42 centres;
- The average clinical availability of each linear accelerator was 8 hours per day;
- The number of linear accelerators per centre ranged from 1 to 10;
- The average treatment time per patient was 11 minutes and the average number of fractions per hour was 4, with a range of 1.7-5.7, the variations correlating with actual staffing levels;
- The data showed reasonable parity in the total number of funded WTE establishment for provision of the standard core services outlined in 2.1.1, based upon the planned daily linear accelerator hours of service. (NB The functions listed in 2.2.3 were **not** included.);
- The average planned WTE per linear accelerator hour was approximately 10 per cent higher in most small departments, ie those with one or two units, demonstrating an efficiency effect with centre size;

- Relatively few departments had cover for leave within their establishments; ie there was no cover for holidays, maternity leave, and necessary CPD activities;
- Four per cent of the radiographer workforce at the time of the survey were identified as being on maternity leave;
- The majority of departments reported inadequate establishments and carried vacancies (survey vacancy level was approximately 17 per cent and was consistent with other vacancy surveys[13]. The managers of these departments reported that this resulted in the inability to utilise equipment fully and this had a direct impact upon radiotherapy waiting times within their centre.

2.3.4.2 In 2003/2004 the proportions of each of the staff groups consisted on average:

87 per cent registered radiographers
13 per cent from non-registered staff groups (3% assistants and 10% helpers)

2.3.4.3 However, the ratio varied, with the maximum proportion of non-registered staff being reported as 25 per cent within one centre.

2.4 Derived staffing benchmark figure/guidance

2.4.1 The survey showed that there was a link between radiotherapy capacity and activity, and radiographic staff numbers (including supporting staff groups). Capacity and activity was also linked to the number of planned Linear Accelerator hours of service, provided each day.

2.4.2 As a result, it was felt possible to provide a staffing benchmark figure related to the linear accelerator hour, to facilitate staffing of the core services listed in 2.2.1:

2.4.3 The staffing required per linear accelerator hour is 1.33 WTE for listed core activities only. (The overall WTE includes radiographers, assistants, helpers and others assisting with core services; for example, radiography booking clerks, departmental secretaries and administrative assistants.)

NB. This figure makes no attempt to detail either the levels of practice or the ratio of each staffing group making up the final figure within a centre. This decision must be taken locally to meet service requirements. It is not anticipated, however, that the numbers of assistant practitioners will exceed 10 per cent of the total.

2.5 A caution

2.5.1 It needs to be recognised that the number given in figure 2.4.3 is **not** adequate for anything other than covering the standard core service as outlined in 2.1.1. The benchmark figure must be treated as guidance only because local variation in the way services are delivered may mean that the number for a particular centre should be higher or even, on occasion, lower.

2.5.2 The recommendations are for an average workload including a range of equipment, technology, technique complexity and departmental working arrangements. Where the caseload is demonstrably higher than UK norms, this will be largely reflected in the number of linear accelerator hours for which the service is commissioned. Where a department has an equipment/technology complement or other condition which is out of the ordinary, for example a very small centre, two linear accelerators, variation from the benchmark figure is likely to be necessary to meet local service circumstances. In this regard, it should be noted that the survey showed establishments to be somewhat higher in centres with two linear accelerators only.

3. Using the benchmark figure

The following tables are included to assist centres to derive a whole time equivalent figure locally.

3.1 Five linear accelerators each with a planned eight hour clinical day

The benchmark figure of 1.33 WTE is multiplied by the number of planned clinical hours per linear accelerator.

8 x 1.33 WTE = 10.64 WTE staff per linear accelerator and associated functions

Total for centre = 53.2 WTE (WTE figure multiplied by number of linacs)

Once the overall figure is derived, it should be tested against the caution given in section 2.5 before acceptance.

The staffing figure derived should be adequate to address the standard core functions listed in 2.1.1 and take into account annual leave, maternity leave, sickness absence and CPD requirement for the staff groups included.

3.2 Two linear accelerators each with a planned eight hour clinical day

The benchmark figure of 1.33 WTE is multiplied by the number of planned clinical hours per linear accelerator.

8 x 1.33 WTE = 10.64 WTE staff per linear accelerator and associated functions

Total for centre = 21.28 WTE (WTE figure multiplied by number of linacs)

This figure and the local situation should be considered further to assess the need for increasing it by 10 per cent to address the small centre effect found in the survey.

Final total for centre: 21.28 + (2.13) = 23.41

As per figure 3.1, the derived figure should be adequate to support the standard core functions listed in 2.1.1 and take into account annual leave, maternity leave, sickness absence and CPD requirement for the staff groups included.

4. The future

4.1 The vision of DH NRAG is to deliver high quality, cost effective care to ensure a world-class cancer service is provided for patients. DH NRAG has facilitated changes to roles, which will, at a local level, require changes to the benchmark figure.

4.2 Patient centred services will demand that the service delivery model changes from one where roles are based around equipment to one related to patient case-mix. The current benchmark figure identified in this guidance document cannot apply to a case-mix centred model of service delivery and must be adapted to meet evolving service needs at local level once baseline staffing levels have been reached, and as soon as possible.

4.3 The College of Radiographers have published a document - *Positioning therapeutic radiographers within cancer services: Delivering patient centred care*[3] - which highlights the currently untapped skills of the profession across the radiotherapy care pathway. Its recommendations must be considered by managers alongside this document which describes a benchmark figure. Together, the two documents should assist with reaching an adequate staffing base in the short term, so that the vital medium and longer term developments set out in *Positioning therapeutic radiographers within cancer services: Delivering patient centred care* can be delivered.

Positioning therapeutic radiographers within cancer services describes three models of care and, whilst maintaining fields of technical expertise, it describes an important shift in the role of therapeutic radiographers to where practice is related to the patient pathway.

The College of Radiographers believes it is vital that, once adequate staffing levels are achieved locally through using the benchmark figure set out in this document, radiographers' education and skills must be used more fully and in accordance with policy set out in *Positioning therapeutic radiographers within cancer services*. Radiotherapy and oncology services are beginning to change as a result of the work of DH NRAG. Service delivery must be re-focused around the patient and the pathway of the patient through the whole of cancer care services.

Therapeutic radiographers have the education and skills to deliver this re-configuration in a cost effective and cohesive manner.

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Appendix A

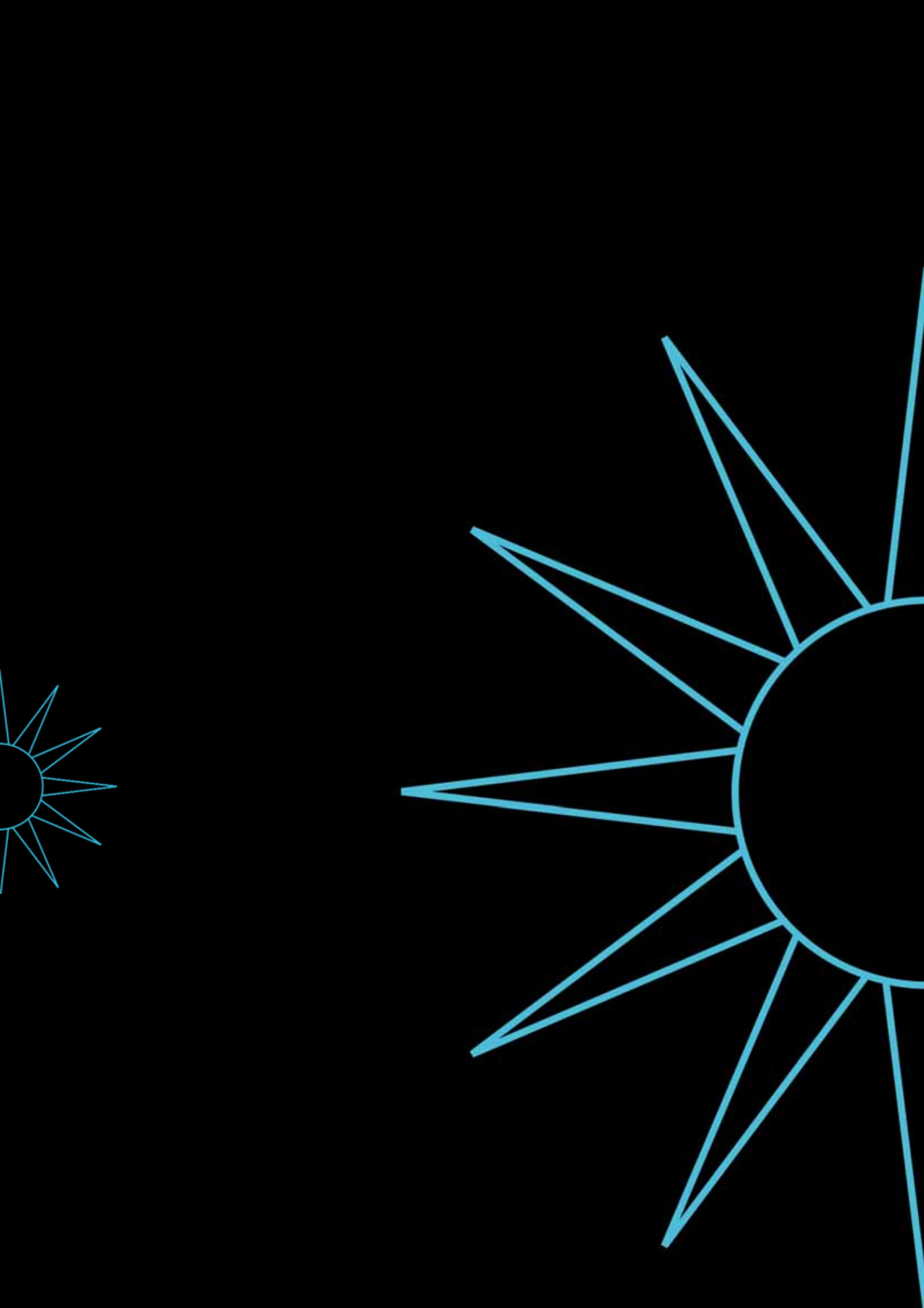
Role of the Therapeutic Radiographer

This document deliberately does not attempt to describe the historic or current role of the therapeutic radiographer. These are more comprehensively described in the following documents:

- *A Curriculum Framework*, London. CoR 2003;
- *Therapeutic radiography: A vision for the future*, London. CoR 1996;
- *Role development revisited: The research evidence 2003*, London. CoR 2003;
- *Radiographic staffing standards in clinical oncology departments*, London. CoR 1999;
- *Radiography skills mix. A report on the four-tier service delivery model*, London. DH June 2003;
- *The scope of practice 2003*, London. CoR 2003;
- Breaking the mould: Roles, responsibilities and skills mix in departments of clinical oncology, London. The Royal College of Radiologists 2002.

It should also be emphasised that current roles of therapeutic radiographers are often much wider than those described in section 2.2.1 of this report, and on which the benchmark staffing figure is based.

It is anticipated that, in order to deliver a world class radiotherapy service, there must be a significant change to present roles and ways of working within radiotherapy and oncology services. This must take full account of appropriate skills mix in order to best use all the skills of the therapeutic radiographer along the radiotherapy pathway. *Positioning therapeutic radiographers within cancer services: Delivering patient-centred care* published by the College of Radiographers in 2005 describes these roles[3].



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