www.rcr.ac.uk

Clinical Oncology
The Royal College of Radiologists

Clinical oncology workforce: the case for expansion

Faculty of Clinical Oncology

Contents

Foreword

This document has been written to provide an overview of the workforce issues in clinical oncology across the United Kingdom (UK). During 2014, The Royal College of Radiologists (RCR) has made separate submissions to Health Education England (HEE) and NHS Education for Scotland (NES) in response to their calls for evidence to support their annual workforce planning exercises but this evidence is not in the public domain. This document collates the evidence provided in those submissions and is expanded to include Northern Ireland and Wales to give a UK-wide picture.

This document contains an analysis of current and expected patterns of practice and workload for clinical oncologists, and current workforce, to support the case for expansion in the clinical oncology workforce. It sets out the evidence for the need for workforce expansion outlined in *Clinical oncology – the future shape of the specialty.*[1]

Dr Di Gilson
Medical Director, Education and Training (Clinical Oncology)
The Royal College of Radiologists

1. Background information

What do clinical oncologists do?

Clinical oncologists are specialist physicians trained in the delivery of radiotherapy and systemic anticancer therapy for adults with solid tumours, some haematological malignancies and radiotherapy for children with cancer. They are the only clinicians trained in the assessment and treatment of patients with the full range of radiotherapy treatment options. The majority of clinical oncologists deliver both systemic therapy and radiotherapy. Each clinical oncologist specialises in the management of specific types of tumour.

Radiotherapy may be delivered using conventional external beam therapy (EBRT) (use of a high-energy X-ray machine – a linear accelerator – to produce beams of radiation that can be directed at the tumour), brachytherapy (where a radioactive source is placed close to the tumour) or molecular radiotherapy (use of injected or ingested radioisotopes), depending on the clinical situation. Systemic therapies include chemotherapy, endocrine therapy and targeted biological therapies (such as antibodies, small molecules and immunotherapy). Systemic therapy and radiotherapy may be used separately, sequentially or concomitantly (chemoradiotherapy), depending on the clinical situation.

The majority of clinical oncologists are active in clinical trials, within both systemic therapy and radiotherapy practice. Some clinical oncologists follow academic careers, ranging from basic cancer biology to the development of radiotherapeutic techniques and schedules, to combination of radiotherapy with systemic therapies and to drug development.

Why is the clinical oncology workforce important?

Clinical oncologists are pivotal in delivering non-surgical oncological care. They are core members of all cancer multidisciplinary teams and are able to manage patients throughout their non-surgical cancer treatment. They are ideally placed to manage the integration of systemic therapy and radiotherapy in patients' care cost-effectively.

Optimum use of radiotherapy is essential, as it is more cost effective than systemic therapies. Treatment with radiotherapy contributes to the cure of 40% of cancer patients, whereas systemic therapy contributes to the cure of 10% of cancer patients. Radiotherapy alone cures 16% of patients.[2] Radiotherapy accounted for 5% of the national spend on cancer treatments in England in 2012.

Clinical oncology training

Clinical oncology trainees complete two years of core medical training and five years of clinical oncology training. The first 3–3.5 years of clinical oncology training cover all tumour sites and include a course covering the sciences that underpin cancer therapy. This ensures good general medical and oncology training in all areas of solid tumour oncology. In the final 1.5–2 years, while consolidating their understanding of cancer treatment and developing their skills in patient management and leadership, trainees develop advanced competencies in a minimum of two tumour sites. This combination of generalist and specialist training delivers a flexible workforce. ensuring that clinical oncologists are able to support patients with co-morbidities and acute oncological problems while still delivering tumour site specialist care required to advise on the best management options for individual patients.

2. Drivers of increasing workload for clinical oncologists

Demographics

More than one-in-three people in the UK will develop some form of cancer during their lifetime. More than a third of cancers are diagnosed in people aged 75 and over.[3] The number of people aged over 75 is expected to grow from 5.4 million in 2015 to 8.8 million in 2035.[4]

With the increasing longevity of the population, the incidence of cancer will increase, as will the number of cancer survivors. Older patients tend to have more co-morbidities, increasing the input required from clinical oncologists to support them through treatment for their cancers. Cancer survivors require input from clinical oncologists if their disease relapses or if they develop late complications of their treatment.

Radiotherapy is often the safest treatment option for patients with multiple co-morbidities and the increase in cancer in the elderly population is expected to produce a disproportionate increase in radiotherapy workload.

Earlier diagnosis of cancer

Initiatives to facilitate earlier diagnosis of cancer will increase the number of patients presenting with localised disease. Radiotherapy is an effective local treatment and the smaller a tumour the greater the chances of obtaining local control with radiotherapy, potentially avoiding the need for surgery.

Culture change

There is increasing awareness of treatment options for patients, accompanied by heightened patient and public expectations. This will be particularly important for patients with cancer. With ever increasing treatment options, the workforce will need the skills and time to explain these options to patients and facilitate their decision-making.

Innovation

For clinical oncology, advanced radiotherapy techniques, such as intensity-modulated radiotherapy (IMRT), offer patients the possibility of improved chances of cure while minimising the side effects of treatment, thus improving the duration and quality of life. Stereotactic body radiotherapy (SBRT) offers the possibility of increasing the effective dose of radiotherapy delivered to a tumour with a smaller number of radiotherapy treatments (fractions) resulting in an increased chance of tumour control and less inconvenience for the patient. The effectiveness of IMRT and SBRT is entirely dependent on image-guided radiotherapy (IGRT) to ensure that treatment is accurately delivered. IMRT, SBRT and IGRT require greater clinical oncologist input in terms of increased time to plan and verify radiotherapy.

The increase in systemic anticancer therapy options for patients means that treatment is available to more patients and that more lines of treatment are offered to individual patients.

Molecular radiotherapy options are also likely to increase.

Advances in personalised medicine mean that treatments will be used more selectively for patients who are most likely to benefit from a specific therapeutic intervention. This will increase the workload for clinical oncologists in ensuring that individual patients have access to the appropriate treatment. This should, however, improve patients' quality of life and bring economic benefits.

Technological progress

Technological developments in genomics will make the possibility of delivering personalised medicine a reality. The clinical oncology workforce will need to be at the forefront of implementation of personalised medicine for patients with cancer.

Increasing clinical trials work

The innovations and technological progress described above will require evaluation in clinical trials. Recruiting patients into clinical trials requires extra clinician input and time to ensure that patients are able to make informed choices about trial entry and that all of the requisite trial data are collected during and after completion of treatment.

Economics

The use of personalised medicine should improve the cost-effectiveness of cancer therapy as patients will receive the treatment most likely to produce a response. This will reduce the use of ineffective treatments with benefits in terms of patients' quality of life and reducing the overall cost of treatment to the NHS.

Optimum use of radiotherapy is essential, as this is more cost-effective than systemic therapies.

3. Estimation of the increasing workload of clinical oncologists in the next five years

The increased demand on clinical oncologists comes in a number of forms:

- The incidence of cancer is expected to increase by 20% over the next ten years (ie 2% per annum). The majority of this increase will occur in the elderly who often have multiple co-morbidities.

- The ageing population will have more co-morbidities and will require more input from the oncology team to support them through their cancer treatment both in outpatient and acute oncology settings.

- It is estimated that the number of cancer survivors is increasing by 3% per year in the UK and there are currently 2 million cancer survivors in the UK.[5] A proportion of these patients will develop recurrence of their cancer and require further treatment. Some patients will have significant delayed long-term complications as a result of their treatment. These patients may be managed by clinical oncologists or require input from clinical oncologists to facilitate onward referral to other clinicians for appropriate specialist care.

- The increase in cancer treatment options makes more lines of therapy available to the individual patient. Systemic therapy workload is increasing by 8% per annum. Clinical oncologists deliver 50% of the chemotherapy in England, compared with 33% delivered by medical oncologists and 17% delivered by clinical haematologists.

- There is expected to be a 1% per annum increase in the number of radiotherapy courses delivered in England. This is a better representation of clinical oncologists' workload than the number of radiotherapy fractions delivered because each course of radiotherapy is individually planned by a clinical oncologist. This 1% increase does not take account of the increasing complexity of radiotherapy (see below).

- In addition to the 1% per annum increase in courses of radiotherapy, there will be increasing use of advanced radiotherapy (IMRT, SBRT and IGRT) techniques. These techniques increase the time required by clinical oncologists (by two to three times per patient) to plan and deliver radiotherapy treatment. These radiotherapy techniques offer the possibility of increased cure rates for cancer whilst minimising/reducing the side effects of treatment. This workload, to date, has been delivered by the current consultant workforce increasing their working hours, often without remuneration or at the expense of supporting professional activities (SPAs). There is increasing evidence that these advanced radiotherapy techniques are of benefit to the majority of patients receiving radiotherapy with curative intent (radical radiotherapy). As the use of these techniques expands, all existing consultants will need to have time allocated in their job plans to complete the required radiotherapy planning and delivery.

- The use of advanced radiotherapy techniques to deliver radical radiotherapy will continue to increase over the next five years. England has lagged behind other developed countries in introducing these advanced radiotherapy techniques and needs to increase their use if patients are to receive the best care. A major contributing factor to this delay in introducing advanced radiotherapy has been consultants not having enough time. The current target in England is that 24% of all patients receiving radical radiotherapy should receive IMRT.[2] The use of advanced radiotherapy techniques (IMRT, SBRT and IGRT) will, and should, expand in order to improve tumour control and reduce toxicity. It is anticipated that 80% of patients receiving radical radiotherapy will be treated with advanced radiotherapy in the future. The current advanced radiotherapy

techniques will continue to evolve and develop and it is essential for patient care that clinical oncologists have time to implement and make the best use of these developments. To allow for the historical shortfall and required expansion in radiotherapy planning time, the RCR estimates that, on average, consultant clinical oncologists will require at least 0.5 extra PAs per week for radiotherapy planning to ensure that all appropriate patients have access to these advanced radiotherapy techniques.

- Internationally, the role of regular peer review of radiotherapy planning is important in ensuring that patients receive consistent, safe, high-quality treatment. Ideally, all clinical oncologists should take part in regular radiotherapy planning quality assurance meetings with their peers. To avoid delays in treatment, these meetings should take place on a weekly basis. At present, the majority of clinical oncologists are unable to participate in such meetings due to lack of time in their job plans. The RCR estimates that, on average, clinical oncologists require an extra 0.25 PAs per week to deliver radiotherapy quality assurance.

- Currently 12% of cancer patients enter clinical trials.[6] Increasing trial availability means that more time must be taken to discuss treatment options with patients and also increases follow-up workload over the current 'standard of care' but is essential to improve outcomes and ensure that treatment is cost effective.

4. Forecast of the required increase in clinical oncologists in the UK over the next five years

Figures 1 and 2 (overleaf) illustrate the RCR's workforce demand and supply predictions for clinical oncologists in the UK for the next five years. The data and assumptions underlying this are set out below.

Forecast workforce/workload demand

The RCR's demand forecast is based on:

- The estimated increase in courses of systemic therapy of 8% per annum and increase in radiotherapy courses by 1% per annum. This will result in an estimated increase in the workload of clinical oncologists of 9% per annum.
- A historic deficit in the time allocated for radiotherapy planning (0.5 PAs per week) and participation in a regular radiotherapy planning quality assurance meeting (0.25 PAs per week), totalling 0.75 PAs per week per consultant. Accommodating this workload will ensure that patients in the UK receive optimal radiotherapy in line with internationally accepted standards of care. Workforce requirements have been modelled with and without additional allowance for this radiotherapy planning time.

Forecast workforce supply

- The results of the most recent RCR workforce census in October 2013 showed there were 749 consultant clinical oncologists (headcount) in substantive posts in the UK (equating to 691 whole time equivalents [WTEs]).[7]
- The median retirement age for consultant clinical oncologists in 2013 was 60. Using this average, 28 consultants are expected to retire each year for the next five years.
- Taking into account attrition rates and the number of trainees reaching Certificate of Completion of Training (CCT) over the last five years, on average approximately 47 trainees are expected to attain CCT and subsequently take up a consultant post in the UK each year for the next five years.
- The participation rate of new consultants is modelled at 0.95, however, the actual level of participation is likely to be lower.
- The high number of expected retirements in the next few years, set against static training numbers and decreasing participation rates means the workforce shortfall in clinical oncology will not be overcome without an increase in training numbers.
- Attrition: based on RCR trainee records for the five year period between 1 January 2009 and 31 December 2013, on average 7% of trainees in the UK do not reach CCT, leaving training prior to completion. Furthermore, on average, 12% of trainees who reach CCT in the UK subsequently take up a post overseas.

Figure 1 (overleaf) demonstrates the shortfall in clinical oncologists over the next five years, modelled with allowance of an additional 0.75 PAs per week per consultant to deliver advanced radiotherapy.

On this basis, to fully meet the needs of the service, it is anticipated that an extra 362 clinical oncology consultants (WTEs) will be needed. Taking into account estimated trainee attrition and an estimated participation rate of 0.95, 93 clinical oncology trainees (headcount) would be required per year for the next five years to close this gap.

Figure 1. Clinical oncology consultant workforce and workload forecast, UK, to 2018
(With 0.75 additional PA time per week for advanced radiotherapy planning)

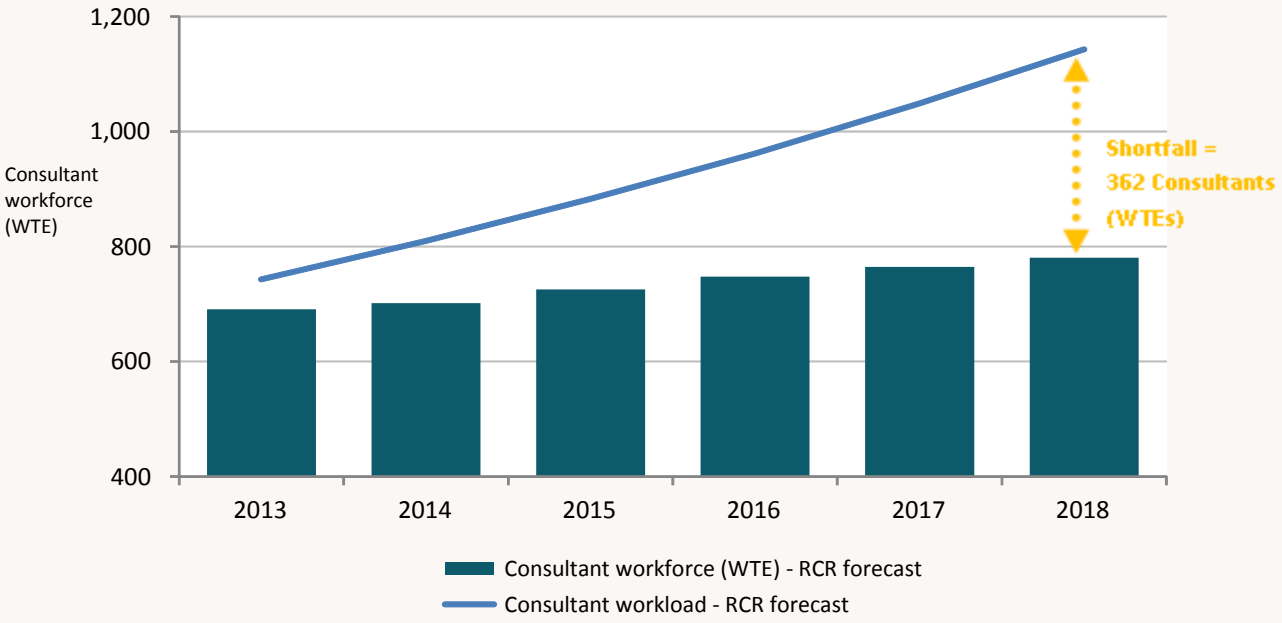
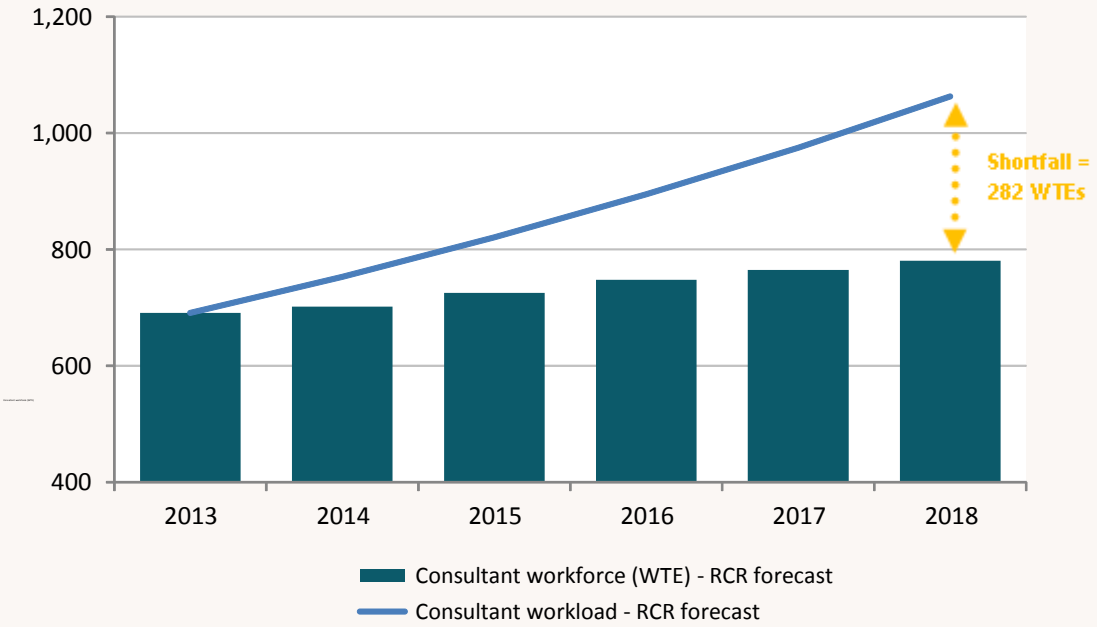


Figure 2 demonstrates the shortfall in clinical oncologists over the next five years, modelled without the allowance of an additional 0.75 PAs per week per consultant to deliver advanced radiotherapy.

On this basis, to fully meet the needs of the service, it is anticipated that an extra 282 clinical oncology consultants (WTEs) will be needed. Taking into account estimated trainee attrition and an estimated participation rate of 0.95, 73 clinical oncology trainees (headcount) would be required per year for the next five years to close this gap.

Figure 2. Clinical oncology consultant workforce and workload forecast, UK, to 2018
(Without additional PA time for advanced radiotherapy planning)



5. What has been done to address this anticipated shortfall?

HEE and NHS Education for Scotland (NES) have been provided with the data for their individual countries with requests for an increase in the training numbers for clinical oncology.

Training programmes and clinical directors have been requested to raise awareness of these issues with their local training commissioners.

The RCR continues to raise awareness of these issues nationally.

References

1. The Royal College of Radiologists. *Clinical oncology – the future shape of the specialty*. London: The Royal College of Radiologists, 2014.
2. Department of Health. *Radiotherapy Services in England 2012*. London: Department of Health, 2012.
3. www.cancerresearchuk.org/cancer-info/cancerstats/incidence/age/ (last accessed 15/12/2104)
4. www.publications.parliament.uk/pa/ld201213/ldselect/ldpublic/140/14012.htm (last accessed 15/12/2014)
5. www.ncin.org.uk/view?rid=70 (last accessed 15/12/2104)
6. www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCEQFjAA&url=http%3A%2F%2Fwww.cancerresearchuk.org%2Fcancer-info%2Fcancerandresearch%2Fclinical-trials-briefsheet&ei=_x1tVJ3EIYLYar6egeAC&usg=AFQjCNEgBYHk_mj5uIHePfd848PP36ehkQ&bvm=bv.80120444,d.ZWU (last accessed 15/12/2014)
7. The Royal College of Radiologists. *Clinical Oncology UK Workforce Census Report 2013.* London: The Royal College of Radiologists, 2014.

Citation details

The Royal College of Radiologists. *Clinical oncology workforce: the case for expansion*. London: The Royal College of Radiologists, 2014.

Ref No. BFCO(14)5

The Royal College of Radiologists
63 Lincoln's Inn Fields, London WC2A 3JW
Tel: +44 (0)20 7405 1282
Email: enquiries@rcr.ac.uk **www.rcr.ac.uk**

A Charity registered with the Charity Commission No. 211540

Clinical Oncology
The Royal College of Radiologists