

CAREERS IN RADIOTHERAPY

RADIOTHERAPY PHYSICS

Clinical Scientists | Clinical Technologists | Clinical Engineers

EAST OF ENGLAND RADIOTHERAPY NETWORK

WHAT ARE CLINICAL SCIENTISTS, CLINICAL TECHNOLOGISTS AND CLINICAL ENGINEERS?

Clinical Scientists

Clinical Scientists work alongside other healthcare professionals to research, develop and test specialist medical equipment. They take a central role in designing, planning and implementing patient radiotherapy treatment programmes.

Clinical Technologists (dosimetrists)

Clinical Technologists, also called healthcare science practitioners, are responsible for planning a patient's radiotherapy treatment. They use complex computer software to calculate the best way to deliver radiation to the tumour while protecting healthy tissue.

Clinical Technologists (engineers)

Clinical Engineers keep radiotherapy machines running safely. They carry out maintenance, find faults and repair complex equipment and systems.

GLOSSARY

AfC - Agenda for Change. The NHS pay scale that sets salaries and working conditions for most NHS staff.

CPD - Continuing Professional Development. The training and learning you do throughout your career to keep your skills up to date.

HCPC - Health and Care Professions Council. The regulator that licenses healthcare professionals in the UK.

IPEM - Institute of Physics and Engineering in Medicine. The professional body for medical physicists and engineers.

PTP - Practitioner Training Programme. A work-based training route for clinical technologists.

STP - Scientists Training Programme. A three-year NHS training scheme for clinical scientists.

QUALIFICATIONS NEEDED

Clinical Scientists

- 5 GCSEs at grades 9 to 4, or equivalent, including English, maths and science
- 2 or 3 A levels, or equivalent, including maths and physics
- A degree with a strong physics content, for example applied physics, physics and mathematics, or astrophysics
- Some departments also ask for an MSc in medical or radiation physics

After your degree, you need to register with the HCPC. You can do this by completing one of the following:

- The 3-year Scientists Training Programme (STP), run by the National School of Healthcare Science
- “Route 2” - in-work training run by the Association of Clinical Scientists, with support from IPEM
- STP equivalence, run by the Academy of Healthcare Science

Clinical Technologist (dosimetrist)

- 5 GCSEs at grades 9 to 4, or equivalent, including English, maths and science
- 2 or 3 A levels, or equivalent, including maths and physics
- A BSc in Therapeutic Radiography
- Optional: a BSc with strong physics content, such as applied physics or astrophysics

You will be expected to register with the Register of Clinical Technologists. You can do this through one of the following routes:

The Clinical Technologist Training Scheme, run by IPEM

- A Healthcare Science Practitioner degree apprenticeship (Level 6)
- The Practitioner Training Programme (PTP), run by the National School of Healthcare Science

Find the universities that provide the academic element of the PTP here

Clinical Technologist (Engineering)

- 5 GCSEs at grades 9 to 4, or equivalent, including English, maths and science
- 2 or 3 A levels, or equivalent, including maths and physics
- Optional: a BSc in physics or engineering

Find accredited engineering courses here

You register with the Register of Clinical Technologists using the same routes as dosimetrists (see above).

Apprenticeships

An apprenticeship lets you earn a salary while you study for your qualification. Your employer and the government cover the tuition fees, so you do not need a student loan.

Apprenticeships are advertised on the NHS jobs website. Go to www.jobs.nhs.uk, click on 'search' and type 'apprentice' or scan the QR code

RESPONSIBILITIES

Clinical Scientist

- Commission and assess specialist equipment, and make sure it is safe to use
- Plan and supervise radiotherapy treatment, working with the wider clinical team
- Process complex patient imaging data
- Support clinical trials
- Research new equipment and techniques, review current practice and advise on new equipment requirements.
- Compile reports to initiate change
- Oversee quality control to make sure equipment gives accurate, consistent results and that outputs are achieved
- Make sure maintenance routines are followed
- Teach and train other healthcare professionals, including radiographers, nurses and doctors

Clinical Technologists

- Produce routine and complex treatment plans, following clinical guidelines
- Check that all the patient images needed to create a treatment plan are available
- Co-register (combine) images from different sources and evaluating the validity of the co-registration.
- Mark out the tumour and surrounding organs on CT scans, where trained to do so
- Advise clinical staff on how different treatment plans affect the radiation dose that the tumour and surrounding organs receive
- Check treatment plans made by other staff before treatment begins
- Help develop new techniques and support the introduction of new equipment

Clinical Engineers

- Monitor and test radiotherapy equipment
- Calibrate devices and take measurements to confirm equipment is safe to use
- Carry out maintenance, fault-finding and repairs on complex radiotherapy machines
- Maintain accurate records of equipment condition, safety checks, repairs and tests
- Work closely with other professionals, including Therapeutic Radiographers and Clinical Scientists
- Use software to diagnose problems, calibrate and repair computer systems used in radiotherapy

SALARY

Clinical Scientists

Trainees usually start at AfC band 6. Once qualified, most Clinical Scientists work at band 7.

Clinical Technologists

Trainee salaries start at band 4 or band 5, depending on your qualifications. With experience, most Clinical Technologists work at band 7.

Clinical Engineers

Depending on your starting qualifications, you can expect to begin at band 3 to band 5.

For current NHS pay rates, visit: www.nhscareers.nhs.uk or scan the QR code



CAREER PROSPECTS

As you gain experience and training, you can move into:

- Specialist roles
- Operational management
- Higher education
- Research
- Medical equipment manufacturing
- Project management
- Quality improvement
- Commissioning
- Leadership

You can progress through the pay bands and work towards a senior management role. As head of a radiotherapy physics department, you would be responsible for your team and for managing a budget.

WORK EXPERIENCE FOR UNIVERSITY APPLICATION

Before your university interview, make sure you have a good understanding of radiotherapy physics. It is strongly recommended that you shadow a Clinical Scientist before you apply. This shows your commitment to the profession. Any experience in a caring or healthcare setting, paid or voluntary, will also strengthen your application.



APPRENTICESHIP DEGREE IN HEALTHCARE SCIENCES



Hear from Freya and Tallulah about their experience

How did you find out about the apprenticeship scheme?

Tallulah: *I started at university just as Covid hit and all learning moved online. I have dyslexia and being taught through pre-recorded videos is not my learning style, so I left university. I knew I wanted to work in a hospital so I looked at alternative routes to find a job I wanted. I found out about degree apprenticeships and realised their advantage as a debt-free way to get the degree alongside practical experience.*

Freya: *I have always been interested in doing an apprenticeship due to its hands-on, practical nature. I attended a specialist STEM college where this route was encouraged just as much as going to university was which meant I was very well supported throughout the process. I found my apprenticeship through an online website designed for students looking to start an apprenticeship or placement in a STEM related subject.*

Why were you interested in an apprenticeship Healthcare Sciences?

Tallulah: *I have always loved science subjects and maths but also have wanted to be in a job where I can help people. Also, it's quite a broad qualification so it gives me the opportunity to really find the area that I want to go into after completing the degree and the experience to back it up.*

***Freya**: I studied biology, maths and physics at A-Level. Working in Healthcare science, in particular Clinical Engineering, allowed me to use elements from each and apply them to a job. Although my role is more 'behind the scenes', I see patients when moving around the hospital and knowing that the role I take ensures safe and efficient treatment for them is very rewarding.*

Why did you choose radiotherapy?

Tallulah: *While doing A level physics we had an optional module to choose from, and I chose medical physics. I looked at medical physics in more depth and I heard about radiotherapy. I read a bit more and realised it would be a rewarding job helping to plan radiotherapy treatment.*

Freya: *Choosing a role within the radiotherapy department means that I get the chance to work on some amazing machines and call upon my existing physics knowledge, while providing important treatment to all patients. The radiotherapy department team all work very closely with each other, from radiographers to engineers and technicians, planners and doctors responsible for referrals*

What support is provided by the university and hospital?

Tallulah: *The university assigned me a tutor. The students had Q+A sessions with her during the first few weeks at university. The hospital has been supportive accommodating my studies and I am allowed to do my study day from home so I can fully focus. I have regular 1-to-1 progress checks with my line manager and also with the university, so I know that if I ever did have a problem there's a support system there.*

Freya: *Both staff at my hospital and at the university have been excellent in trying to maintain the balance of work-based learning alongside the lectures and university assignments we are given. We are allocated 20% of our contracted working hours to dedicate to our studies.*

What advice would you give to others considering an apprenticeship in healthcare sciences?

Tallulah: *It's such an amazing opportunity, but it requires hard-work and good time management. Research the different areas of healthcare science you'd be interested in before applying as it's such a broad subject to go into!*

Freya: *I would say to someone considering an apprenticeship in a Healthcare science field to just go for it. If you have a passion and basic knowledge of the field, it's such a great opportunity to be in a real working environment and develop your practical skills as well as your theory. The earn-as-you-learn alongside the experience you gain provides such a great head start. You can get so much out of an apprenticeship as long as you ask the right questions and are willing to get stuck in!*

FOR MORE INFORMATION.....

The East of England Radiotherapy Network's website has a page dedicated to careers in radiotherapy. You will find more information and links to videos about:

- Radiotherapy
- Being a member of the radiotherapy physics team
- Studying radiotherapy physics
- Working in the NHS

Visit: www.eastofenglandradiotherapynetwork.nhs.uk/careers

Or scan the QR code

To apply to visit one of our radiotherapy departments, complete the form at: https://forms.office.com/e/0T7pviWShr

You must be 16 or over.

For more information, contact: eofertnetwork@nnuh.nhs.uk

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