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Clinical or medical technology in medical physics

Healthcare increasingly uses sophisticated equipment and instruments to diagnose illness and to treat patients.

Clinical technologists (sometimes known as medical technologists) are responsible for maintaining, monitoring and operating complex, specialised equipment used in the diagnosis and treatment of patients.



Overview

Modern day medicine utilises an increasingly wide range of cutting-edge technology in various areas, such as radiotherapy [1], bio-engineering, dialysis, laser procedures, magnetic resonance imaging (MRI) [2], nuclear medicine and ultrasound [3].

...maintaining, monitoring and operating complex, specialised equipment used in the diagnosis and treatment of patients.

There is an increasing demand for people with the correct medical physics knowledge to service, check the performance of, and gauge any environmental effects of this equipment.

Working life

You are likely to specialise in one of a number of areas:

- nuclear medicine [4] - you'll be responsible for preparing and purifying radioactive materials, calculating doses and safe disposal whilst measuring and testing equipment safety levels. Read more about nuclear medicine [5]
- medical engineering [6] - you'll usually have expertise in electronic or mechanical engineering. In this area, you could be helping in the design, construction and maintenance of specialist clinical equipment for an entire hospital. Read more about clinical engineering [7]
- mobility and gait analysis (problems with walking and balance) – you'll be inputting and processing complex gait analysis from 3-D video tracking (and other techniques) and maintaining all of the equipment used in the laboratory. You may also help the clinical team with the physical assessment of patients.
- radiotherapy technology [8] – you'll be undertaking the quality control of radiotherapy [1] dosimetry equipment and treatment units, (such as linear accelerators and brachytherapy [9] equipment), and computing radiation treatment plans. You might also maintain and service radiation therapy equipment and construct patient fixation/immobilisation devices. Read more about radiotherapy physics [8] Read more about radiation physics and radiation safety physics [10].
- renal technology [11] – you'll be responsible for the safe and efficient working of renal dialysis equipment (haemodialysis [12], peritoneal dialysis, and water treatment) both in hospital and at the patient's home. Read more about renal technology [11].
- vascular technology [13] – you'll be performing and interpreting non-invasive diagnostic studies on patients with arterial and venous disease. These studies include ultrasound [3] imaging and blood-flow waveform analysis, and blood pressure measurement at rest and after exercise. You'd also carry out vascular measurement during surgery. Read more about vascular science [13]

Where will I work?

As a clinical technologist, you are most likely to be based in a medical physics department within a hospital. However, you could work in almost any part of the hospital.

While some clinical technologists spend much of their time in the laboratory or workshop, many have contact with patients and all are involved in technical innovation that has a direct benefit for patients. For example, you could specialise as a renal technologist and would be likely to visit kidney dialysis patients at home.

Who will I work with?

You can expect to work closely with other healthcare scientists and doctors, as new equipment, techniques and instruments are introduced.

Want to learn more?

- Find out more about the entry requirements and skills required to enter a career in clinical or medical technology in medical physics

[14]

- Find out more about the training you'll receive for a career in clinical or medical technology in medical physics [15]

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Pay and conditions

Most jobs in the NHS are covered by the Agenda for Change (AfC) [16] pay scales. This pay system covers all staff except doctors, dentists and the most senior managers. As a healthcare scientist working in clinical or medical technology, you may earn a salary between bands 5 and 9, depending on the role and level of responsibility. So for example, as a healthcare science practitioner, you'd usually start on band 5, with opportunities to progress to more senior positions. Trainee clinical scientists train at band 6 level, and qualified clinical scientists are generally appointed at band 7. With experience and further qualifications, you could apply for posts up to band 9.

Staff will usually work a standard 37.5 hours per week. They may work a shift pattern.

Terms and conditions of service can vary for employers outside the NHS.

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Where the role can lead

Clinical technologists are graded according to seniority. In the lower grades, the work is more routine, while higher grade posts involve more decision making and responsibility for managing and training others. Progression through the grades is not automatic but is gained by applying for higher grade vacancies.

With further training or experience or both, you may be able to develop your career further and apply for vacancies in areas such as further specialisation, management, research, or teaching.

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Job market and vacancies

Job market

In November 2018, there were 6,123 clinical scientists registered with the Health and Care Professions Council [17].

The NHS Scientist Training Programme (STP) [18] attracts many more applicants than there are places and so there is considerable competition for places.

Finding and applying for jobs

Where positions for trainee clinical or medical technologists still exist, these will usually be advertised on the NHS Jobs website [19] or in the local press and job centres.

Applications for full-time BSc healthcare science courses need to be made through the Universities and Colleges Admissions Service (UCAS) [20].

Find a list of universities accredited to run the BSc (Hons) healthcare science courses using our course finder [21].

When you're looking for job vacancies or training places, there are a number of sources you can use, depending on the type of work you're seeking.

Check vacancies carefully to be sure you can meet the requirements of the person specification before applying and to find out what the application process is. You may need to apply online or send a CV for example.

For the STP [18] there is an annual recruitment cycle. Applications usually open in early January for the intake in the following autumn and should be made through the National School of Healthcare Science's website [22], where you can also find information about the programmes and the recruitment process.

Key sources relevant to vacancies in the health sector:

- Vacancies in organisations delivering NHS healthcare can be found on the NHS Jobs website [19].
- Vacancies in local government can be found on the Local Government Jobs website [23] and the Jobs Go Public website [24].

As well as these sources, you may find suitable vacancies in the health sector by contacting local employers directly, searching in local newspapers and by using the Universal Jobmatch tool [25].

Find out more about applications and interviews [26].

Volunteering is an excellent way of gaining experience (especially if you don't have enough for a specific paid job you're interested in) and also of seeing whether you're suited to a particular type of work. It's also a great way to boost your confidence, and you can give something back to the community.

Find out more about volunteering and gaining experience [27].

Further information

For further information about working and training in clinical/medical technology, please contact:

- Academy for Healthcare Science [28]
- European Dialysis and Transplant Nurses Association [29]
- Health and Care Professions Council [30]
- Institution of Physics and Engineering in Medicine [31]
- National School of Healthcare Science [22]
- The British Nuclear Medicine Society [32]

- The British Nuclear Medicine Society (careers website) [33]
- UCAS [34]

Other roles that may interest you

- Nuclear medicine (healthcare scientist) [5]
- Medical device risk management and governance [35]
- Diagnostic radiographer [36]
- Therapeutic radiographer [37]

Source URL:<https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/clinical-or-medical-technology-medical-physics>

Links

[1] <https://www.healthcareers.nhs.uk/glossary#Radiotherapy>
 [2] https://www.healthcareers.nhs.uk/glossary#Magnetic_resonance_imaging_MRI
 [3] <https://www.healthcareers.nhs.uk/glossary#Ultrasound> [4] <https://www.healthcareers.nhs.uk/explore-roles/physical-sciences-and-biomechanical-engineering/nuclear-medicine>
 [5] <https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/nuclear-medicine-healthcare-scientist>
 [6] <https://www.healthcareers.nhs.uk/explore-roles/physical-sciences-and-biomechanical-engineering/medical-engineering> [7] [https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/physical-sciences-and-biomedical-engineering/clinical-measurement](https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/clinical-measurement)
 [8] <https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/radiotherapy-physics>
 [9] <https://www.healthcareers.nhs.uk/glossary#Brachytherapy> [10] <https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/radiation-physics-and-radiation-safety-physics> [11] [https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/physical-sciences-and-biomedical-engineering/renal-technology](https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/renal-technology)
 [12] <https://www.healthcareers.nhs.uk/glossary#Haemodialysis> [13] <https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physiological-sciences/vascular-science> [14] <https://www.healthcareers.nhs.uk/explore-roles/physical-sciences-and-biomechanical-engineering/clinical-technologist/entry> [15] <https://www.healthcareers.nhs.uk/explore-roles/physical-sciences-and-biomechanical-engineering/clinical-technologist/training>
 [16] <https://www.healthcareers.nhs.uk/about/careers-nhs/nhs-pay-and-benefits/agenda-change-pay-rates>
 [17] <http://www.hcpc-uk.org> [18] <https://www.healthcareers.nhs.uk/i-am/considering-or-university/not-studying-health-related-degree/nhs-scientist-training-programme> [19] <http://www.jobs.nhs.uk>
 [20] <http://www.ucas.com> [21] <https://www.healthcareers.nhs.uk/i-am/looking-course>
 [22] <http://www.nshcs.hee.nhs.uk/> [23] <http://www.lgjobs.com/> [24] <http://www.jobsgopublic.com/>
 [25] <https://www.gov.uk/jobsearch> [26] <https://www.healthcareers.nhs.uk/career-planning/offering-career-support/training-and-teaching-resources-young-people/application> [27] <https://www.healthcareers.nhs.uk/i-am/secondary-school-or-fe-college/gaining-experience> [28] <http://www.ahcs.ac.uk/>
 [29] <http://www.edtnaerca.org/> [30] <http://www.hcpc-uk.org/> [31] <http://www.ipem.ac.uk/>
 [32] <http://www.bnms.org.uk/> [33] <http://www.bnms.org.uk/careers> [34] <http://www.ucas.com/>
 [35] <https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/physical-sciences-and-biomedical-engineering/medical-device-risk-management-and-governance>
 [36] <https://www.healthcareers.nhs.uk/explore-roles/allied-health-professionals/roles-allied-health-professions/roles-allied-health-professions/diagnostic-radiographer> [37] <https://www.healthcareers.nhs.uk/explore-roles/allied-health-professionals/roles-allied-health-professions/roles-allied-health-professions/therapeutic-radiographer>