



Careers in healthcare science

Caring, compassionate, committed

Make a difference with a career in health

Welcome

A career for you

There are more than 350 roles in health, and many of them are part of a wider team which works alongside other health professionals for the benefit of patients and the public.

As well as the NHS itself, a great many large and smaller organisations provide healthcare and work to prevent ill health in the UK.

These include public and private sector organisations, community interest companies, social enterprises and charities, and you could work for the NHS or any one of these other organisations in a health role.

Some roles give you direct contact with patients, while in others you are part of a vast support network vital to delivering healthcare and preventing ill health, and good team-working is essential. Some jobs are in hospitals, others are based in the community: increasingly, health and social care services are integrated or co-ordinated in order to provide a seamless service for people with a range of needs.

We actively recruit people of all ages, backgrounds and levels of experience, including people who have worked in other sectors or who bring life experience from outside the world of work. This helps us to understand the different needs of patients, families and carers, and to provide the best possible service every day.

NHS values and the 6Cs of compassionate care

To apply for any job or apprenticeship in the NHS or in an organisation that provides NHS services, or for a course with clinical placements in the NHS, you'll need to show how you think the values of the NHS Constitution would apply in your everyday work.

The NHS Constitution values are:

- > Working together for patients
- > Respect and dignity
- > Commitment to quality of care
- > Compassion
- > Improving lives
- > Everyone counts

These values may also be promoted as the 6Cs of compassionate care, as part of Leading Change, Adding Value. The 6Cs are:

- > Care
- > Compassion
- > Competence
- > Communication
- > Courage
- > Commitment

Find out more about the NHS Constitution and the 6Cs at:

 www.healthcareers.nhs.uk/nhsconstitution

 www.healthcareers.nhs.uk/6Cs

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Your career in healthcare science

In this booklet, you'll find out what this fast-developing area can offer you, and learn how it fits into the day-to-day working of healthcare.

If you are passionate about technology or science, and about helping others, a career in healthcare science offers a wide range of opportunities.



Healthcare science staff play a vital role in the prevention, diagnosis and treatment of a huge number of medical conditions, as well as in rehabilitation. Rapid advances in science and technology mean this is now one of the most exciting, challenging and rewarding areas of the health system.

Whatever your academic background, if you have an interest in science, you can find a role that's right for you.

For the most up-to-date information on entry routes into healthcare science roles, visit www.healthcareers.nhs.uk/studyinghealthcarescience



To find out more about working in healthcare science, visit www.healthcareers.nhs.uk/explore-roles



Or if you have any questions, you can call our helpline on **0345 60 60 655** or email



advice@healthcareers.nhs.uk

FAQs

What do healthcare scientists do in the NHS?

Healthcare scientists help prevent, diagnose and treat illness using their knowledge of science and their technical skills. They use their expertise to help save lives and improve patient care in a supporting role or in direct contact with patients. They work in four main areas - life sciences, physiological sciences, physical sciences and clinical engineering, and clinical bioinformatics.

Aren't all healthcare scientists based in laboratories, and spend their time looking down microscopes?

Not at all. There are scientists who use a variety of highly specialised equipment to analyse body tissue, blood and other bodily fluids. However, many healthcare scientists, such as those in the physiological sciences and some in physical sciences and clinical engineering, will have a lot of direct patient contact and work in clinics or on wards.

How do I train to work as a scientist in the NHS?

The training you'll need depends on the particular role you are working in. Training for support staff in healthcare science, for example as a cervical cytology screener or phlebotomist, is usually on the job. So you'll be training while you're working, typically towards a vocational qualification, such as a foundation degree.

A number of universities provide healthcare science degrees for undergraduates. Use our course finder to search for accredited degrees in healthcare science at: www.healthcareers.nhs.uk/courses.

The NHS Scientist Training Programme is for graduates who train by working and studying towards professional postgraduate qualifications. Visit the National School of Healthcare Science website for details: www.nshcs.org.uk/stp-recruitment.

Apprenticeships in healthcare science are increasingly available at different levels, including intermediate, advanced, higher and degree levels, offering the opportunity to gain relevant qualifications while you're working.

Qualified and experienced registered clinical scientists can develop their career further through Higher Specialist Scientist Training.

What are healthcare science assistants and associates?

They are support staff in healthcare science. You do not necessarily need a degree for these roles and it could be your first step into a healthcare science career. The work that you do will depend on the role. Examples include working as a cervical cytology screener, phlebotomist or newborn hearing screener.

As a starting point, have a look at www.healthcareers.nhs.uk/healthcarescienceassistant

Which role is right for you?

Healthcare science is one of the fastest-moving areas of the NHS and its importance will continue to grow.



On a day-to-day basis, the NHS relies on the healthcare science workforce to gather information about patients, recommend the best treatment and, in many cases, administer it themselves. They contribute to 80% of decisions about patient treatment.

At the same time, they are continually developing and testing more sophisticated technology and techniques. Today's scientific advances will form the basis of tomorrow's treatments, providing safer and more effective ways to diagnose and manage medical conditions.

The four areas of healthcare science

The work of healthcare science staff is grouped into four main areas, based on the type of science involved in their work:

- clinical bioinformatics
- life sciences
- physical sciences and clinical engineering
- physiological sciences

Clinical bioinformatics

If you work in clinical bioinformatics, you'll be responsible for developing and improving methods for acquiring, storing, organising and analysing biological data that supports the delivery of patient care.

You'll use areas of computer science including software tools that generate useful biological knowledge by manipulating 'big data'.

Clinical bioinformatics is divided into three fields:

- **bioinformatics (genomics)**
- **bioinformatics (health informatics)**
- **bioinformatics (physical sciences)**

Your exact role will depend on the field in which you work. For example, in genomics you might be supporting the 100,000 Genomes Project, connecting computing, biology and medicine; in health informatics, you could be ensuring that informatics data is used efficiently and to the required standards; or in physical sciences, you could be designing the equipment and software that does the processing of the data.

You will work as part of a multidisciplinary team that includes clinical scientists, doctors specialising in genetics, specialist nurses, genomic counsellors, informatics specialists (such as clinical informaticians), physicists, clinical engineers, information management and technology teams, and external providers of software and databases.

Life sciences

If you work in life sciences, you will play a crucial role in helping to improve our understanding of illnesses and their diagnosis. You might also be responsible for developing new treatments for common medical problems, such as infertility or allergies.

Roles in the life sciences include those specialising in blood science, cellular science, genomics and infection science. Each has its own particular focus.

Most of your time will be spent in hospital laboratories, but you may also work on hospital wards or in the community. In a hospital setting, you will often be working in a clinical pathology laboratory to analyse different samples from patients and give doctors the information they need to make an accurate diagnosis. You will also work with doctors to choose the most effective treatment. Genomics is often based in specialist hospitals.

Life sciences is divided into four areas, each with its own particular focus:

- **blood sciences**
- **cellular sciences**
- **genomic sciences**
- **infection sciences**

To find out more about the roles available in life sciences, visit www.healthcareers.nhs.uk/lifesciences

Physical sciences and clinical engineering

In this area, you will work closely with other clinical teams, applying your skills and knowledge of the physical sciences for both diagnosis and treatment.

You'll also be responsible for developing new techniques and technology to measure what is happening in the body and to diagnose and treat disease. These might include proton beam therapy, ultrasound, radiation, magnetic resonance imaging and clinical photography to explore or record the workings of the body.

Part of your role may be to ensure that the complex equipment used in modern hospitals is purchased, calibrated, maintained and used safely and effectively.

You might also develop techniques to design artificial limbs and body parts, or improve facial reconstruction for those involved in accidents or born with disabilities.

Some of these roles involve direct contact with patients.

Physical sciences and clinical engineering is divided into:

- **medical physics with four areas**
 - **radiotherapy physics**
 - **radiation safety physics**
 - **imaging with ionising radiation**
 - **imaging with non-ionising radiation**
- **clinical pharmaceutical sciences**
- **reconstructive sciences**
- **clinical engineering with three areas:**
 - **rehabilitation engineering**
 - **medical device risk management and governance**
 - **clinical measurement and development**

To find out more about the roles available in physical sciences and clinical engineering, visit www.healthcareers.nhs.uk/physicalsciences

Physiological sciences

In this area, you'll be part of a medical or surgical team. Your work will involve direct interaction with patients and you will use the very latest techniques and equipment to identify any abnormalities and help to restore body functions, such as problems with the heart and lungs, hearing, vision or nervous system.

You may also provide long-term care for patients, helping to improve their quality of life.

Most healthcare science staff in this area are based in hospitals, working in clinics or departments and operating theatres. However, there are increasing opportunities to work in the community at a health centre, visiting people in their homes or at school.

You will work with patients of all ages, from newborn babies to the elderly.

To find out more about the roles available in physiological sciences, visit www.healthcareers.nhs.uk/physiologicalsciences

Healthcare science roles at a glance

Within healthcare science, there are a range of different opportunities, each playing a vital role in the diagnosis, treatment and management of medical conditions.

This section gives a brief overview of the roles in each of the four broad areas of healthcare science.

You can find more detailed information about all these disciplines at www.healthcareers.nhs.uk/healthcarescience

Watch a short video about some healthcare science roles on our YouTube channel: www.youtube.com/Healthcareers



See **real-life stories** of people working in some healthcare science roles at the end of this section.

"Seeing an improvement in a patient's level of function and, in turn, quality of life, is very satisfying."

Rachael Andrews,
Trainee healthcare scientist



Clinical bioinformatics

Type of work	Examples of roles and responsibilities
Clinical bioinformatics (genomics)	> supporting the 100,000 Genomes Project, connecting computing, biology and medicine
Clinical bioinformatics (health informatics)	> ensuring that bioinformatics data is used efficiently and to the required standards
Clinical bioinformatics (physical sciences)	> designing the equipment, software and algorithms that process clinical and genetic data

Life sciences



Blood sciences

Type of work	Examples of roles and responsibilities
Clinical biochemistry and analytical toxicology	<ul style="list-style-type: none">> analysing patients' samples to help with the diagnosis and management of their condition> investigating the effects of drug overdose and other harmful substances on patients
Clinical immunology	<ul style="list-style-type: none">> helping to diagnose and monitor conditions that attack the immune system, such as allergies or HIV
Haematology/transfusion science	<ul style="list-style-type: none">> diagnosing and monitoring blood disorders, such as leukaemia, anaemia and haemophilia> finding the right type of blood for patients who need it, for example during an operation

Cellular sciences

Type of work	Examples of roles and responsibilities
Cytopathology and cervical cytology	<ul style="list-style-type: none">> screening cervical samples> examining other tissue samples for abnormalities
Histocompatibility	<ul style="list-style-type: none">> preparing suitable tissue for organ and bone marrow transplants
Histopathology	<ul style="list-style-type: none">> examining tissue samples under a microscope to reveal the structure of cells and tissues
Immunogenetics	<ul style="list-style-type: none">> developing tests to check patients' immune systems
Reproductive science	<ul style="list-style-type: none">> dealing with infertility treatments such as in-vitro fertilisation (IVF)> collecting eggs from patients and preparing them for fertilisation



Genomics

Type of work	Examples of roles and responsibilities
Cancer genomics	<ul style="list-style-type: none">> examining DNA to identify if and what type of cancer a patient may have> working with other healthcare scientists and doctors to provide a diagnosis and find the best treatment for patients
Genomics	<ul style="list-style-type: none">> analysing patients' cells to highlight any problems, for example during pregnancy> diagnosing some forms of leukaemia> examining patients' DNA to find inherited conditions and to predict the likelihood of them being passed on to the next generation
Genomics counselling	<ul style="list-style-type: none">> taking a family tree and interpreting the risks of inheriting or passing on a genetic condition> assessing which genetic or genomic test is the most appropriate and ordering it> supporting and empowering people as they adjust to the genetic condition in them or their family
Haematology/transfusion science	<ul style="list-style-type: none">> diagnosing and monitoring blood disorders, such as leukaemia, anaemia and haemophilia> finding the right type of blood for patients who need it, for example during an operation

Infection sciences

Type of work	Examples of roles and responsibilities
Medical microbiology and virology	<ul style="list-style-type: none">> studying bacteria, viruses, fungi and parasites that cause infection> working on the prevention and control of epidemics

Specialist areas

Type of work	Examples of roles and responsibilities
Anatomical pathology	<ul style="list-style-type: none">> helping doctors identify the causes of death and assisting with post-mortems> supporting bereaved relatives



Physical sciences and clinical engineering



Medical physics

Type of work	Examples of roles and responsibilities
Clinical pharmaceutical science	<ul style="list-style-type: none"> ➤ manufacturing and supplying radioactive substances for use in nuclear medicine
Diagnostic radiology (imaging with ionising radiation/radiation safety) and MRI (imaging with non-ionising radiation)	<ul style="list-style-type: none"> ➤ monitoring the performance of imaging equipment and advising on new techniques for improving results
Nuclear medicine (imaging with ionising radiation)	<ul style="list-style-type: none"> ➤ developing and using techniques that involve radioactive substances to help diagnose and treat patients
Radiation safety physics (radiation protection)	<ul style="list-style-type: none"> ➤ ensuring the safety of staff, patients and the general public in areas where radiation is used for imaging or treating patients by using specialist equipment to monitor and control dose levels
Radiotherapy physics	<ul style="list-style-type: none"> ➤ using specialist equipment to measure and calculate the doses of radiation received by patients and maintaining the precision and accuracy of radiation treatments for cancer
Ultrasound (imaging with non-ionising radiation)	<ul style="list-style-type: none"> ➤ developing and using ultrasound techniques and equipment to help diagnose and treat patients safely



Clinical engineering

Type of work	Examples of roles and responsibilities
Clinical measurement	<ul style="list-style-type: none"> > design and develop instrumentation for taking clinical measurement on patients such as analysing blood flow and heart rhythm
Clinical photography	<ul style="list-style-type: none"> > providing different types of images, such as photography, fine art and graphic design, to assist with the diagnosis and treatment of patients
Medical engineering, medical device risk management and governance	<ul style="list-style-type: none"> > ensuring medical equipment is installed, used and maintained correctly, and advising on the procurement of new equipment
Reconstructive science (maxillofacial prosthetics)	<ul style="list-style-type: none"> > specialising in the reconstruction of jaws, faces and skulls for patients needing corrective treatment
Rehabilitation engineering	<ul style="list-style-type: none"> > assessing the individual needs of disabled people and prescribing assistive technology to meet those needs, including the design and development of custom-made devices and systems
Renal technology	<ul style="list-style-type: none"> > ensuring renal dialysis equipment is maintained and used effectively

Physiological sciences

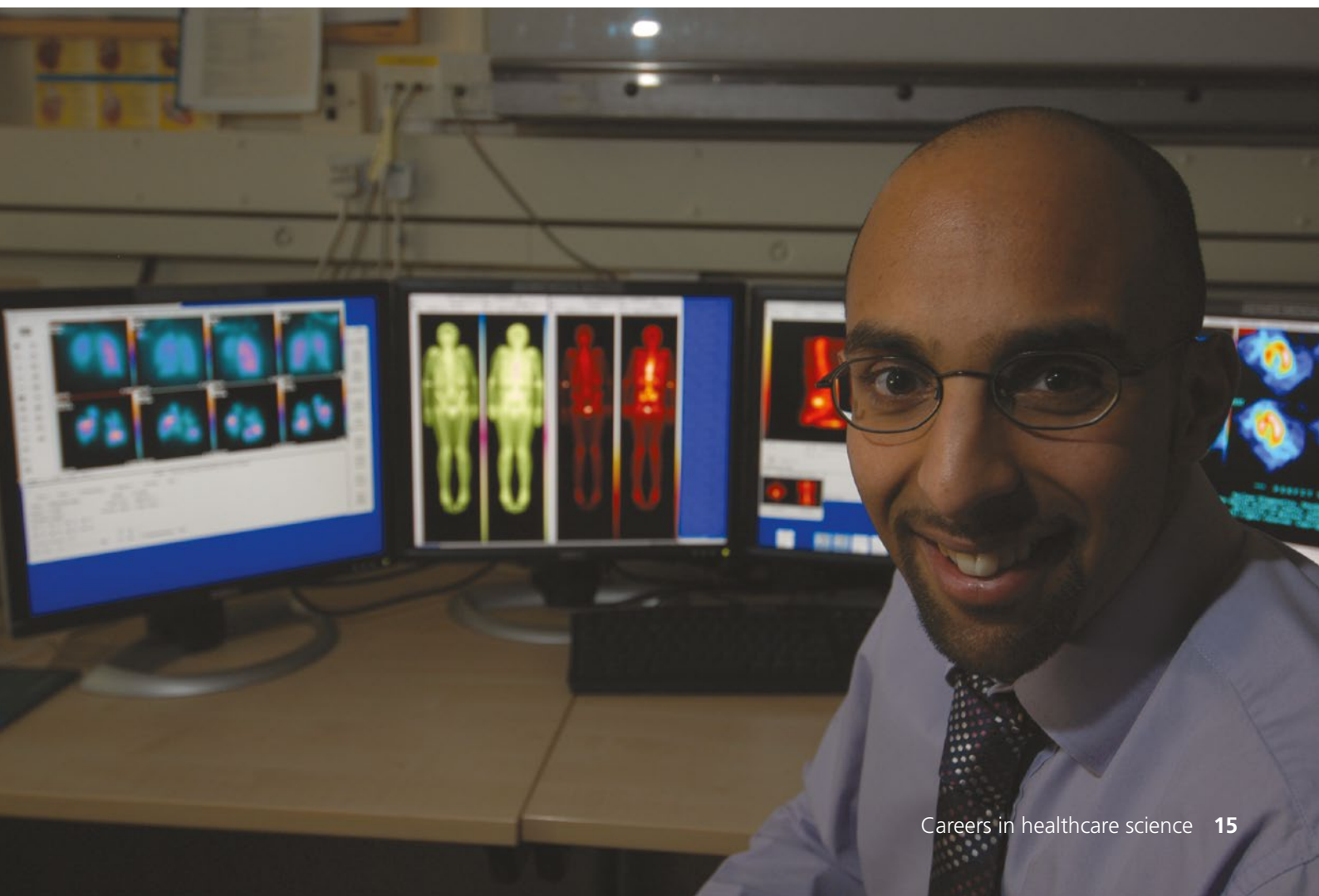


Cardiovascular, respiratory and sleep sciences

Type of work	Examples of roles and responsibilities
Cardiac sciences	<ul style="list-style-type: none"> > assessing patients with suspected or known heart disease > measuring and analysing the mechanical and electrical function of the heart and providing treatment
Clinical perfusion	<ul style="list-style-type: none"> > managing equipment used to support patients' hearts and lungs during major operations
Critical care science	<ul style="list-style-type: none"> > ensuring that complex equipment for life support and monitoring critically ill patients is set up and used correctly
Gastrointestinal physiology	<ul style="list-style-type: none"> > measuring and assessing activity in the digestive system > helping with diagnosis > providing treatment to improve patients' muscle tone
Respiratory science	<ul style="list-style-type: none"> > assessing patients who may have a lack of oxygen in their lungs, airways or blood > providing treatment and care to patients
Sleep science	<ul style="list-style-type: none"> > monitoring patients who have sleep-related symptoms to identify problems that need treatment and long-term care
Urodynamic science	<ul style="list-style-type: none"> > investigating urinary difficulties and helping to diagnose, plan and monitor treatment
Vascular science	<ul style="list-style-type: none"> > assessing patients who have problems with their arteries and veins > helping to identify disease and guide treatment

Neuro-sensory sciences

Type of work	Examples of roles and responsibilities
Audiology	<ul style="list-style-type: none">> measuring and evaluating people's hearing and balance> fitting hearing devices> offering support to help improve the quality of patients' lives
Neurophysiology	<ul style="list-style-type: none">> investigating the function of the nervous system to help diagnose and monitor neurological disorders
Ophthalmic and vision science	<ul style="list-style-type: none">> investigating eye and vision disorders for diagnosis and treatment





{ Real-life stories



Clinical bioinformatics

Health Informatics



Name

Thomas Butterfield

Job title

Clinical scientist (clinical computing),
Sheffield Teaching Hospital NHS
Foundation Trust

Entry route

Degree in electronics and NHS
Scientist Training [Master's]
Programme

**"There are always new and
exciting technologies
to explore."**

How I got into the role

I fully intended to go into medical device development but did one of my training placements in clinical computing and got hooked on the fast changing technology and plentiful supply of interesting challenges.

What I do

My job is all about problem solving. My colleagues and I develop computer technology to improve the way our hospital runs. That could be anything from designing interfaces to allow quicker (but still safe and secure) access to information about our patients to sophisticated behind-the-scenes algorithms for data mining or processing images.

I work with a range of staff including clinicians, nurses and various other technical and non-technical staff. The success of my projects is directly related to how well I work with the people who'll end up using the technological solution I develop, so it's important to have good working relationships.

The best bits

The best parts of the job are always seeing the software I developed being used to improve the way we run our services and making a positive difference to our staff/patients' lives. It is very satisfying to find an elegant technical solution to what can be very complex problems. I am also constantly learning in this job and there are always new and exciting technologies to explore.

In recent years it has been especially interesting to work with 'big data' technologies. With the era of machine learning/artificial intelligence firmly upon us, I am now working with some of these technologies which are fascinating. It can take a long time to see change implemented in an organisation as large as the NHS which can be frustrating at times.



Life sciences: Blood sciences

Clinical biochemistry



Name

Leanne Evans

Job title

Laboratory support technician,
Liverpool Clinical Laboratories

Entry route

Life sciences applicable to
medicine degree

**"There are many opportunities
for hands-on experience that
I wouldn't get in other roles."**

How I got into the role

During my A-levels and degree in 'life sciences applicable to medicine', I worked as a phlebotomist. My role consisted of obtaining emergency blood samples from a wide range of wards, including haematology, geriatric medicine and surgery, for analysis. I really enjoyed my role and it sparked my interest in working in laboratories. After graduating, I applied for a laboratory support technician role because I was looking to gain some hands-on experience and strengthen my technical skills.

What I do

In my current position, I support clinical and biomedical scientists to analyse blood samples to help with the diagnosis and treatment of patients. There's no such thing as a typical day because it depends where I'm based in the laboratory.

On the days when I'm working in the automated part of the laboratory, I ensure that urgent samples are processed and that the results are obtained within strict timeframes. Here, I may also be involved in running both the pre and post-analytical systems. On other occasions, I may be based in the

specialised high-pressure liquid chromatography/mass spectrometry section. In this part of the laboratory, I use non-automated techniques to perform a wide range of tests, including those for immunosuppressant drugs and a range of vitamins and steroids.

The best bits

I love my job because it's very interesting and diverse. There are many opportunities for hands-on experience that I wouldn't get in other roles. I'm also constantly learning new techniques and adding to my knowledge.

One of the highlights in my role so far has been contributing to work to look into ways the laboratory can improve its current methods. Whilst working on this project, I had the opportunity to present my work at various meetings including the international EuroLab conference.



Life sciences: Genomics

Name

Ronnie Wright

Job title

Clinical scientist, Manchester
Centre for Genomic Medicine

Entry route

Genetics degree

**"Genetics is an ever-changing
field and it's great to know
I'm part of something that is
constantly improving."**



How I got into the role

My interest in genetics began during my school years when science-led stories were often in the papers. I found news stories, such as genetically modified crops, the human genome mapping project and the first mammal to be cloned from an adult somatic cell - Dolly the sheep! - very fascinating. After school and a brief spell as a professional footballer, I did a genetics degree at the University of Manchester.

What I do

On a typical day, I undertake laboratory and analytical work in an attempt to establish if there is a genetic basis to a patient's disease. The process in which I do this has changed drastically compared to when I first started working ten years ago.

Genetics is an ever-changing field and it's great to know I'm part of something that is constantly improving to provide people with better diagnoses and treatment for some genetic disorders. I look forward to seeing how my job and the methods in which we analyse genes will look in another ten years' time.

The best bits

One of the great things about my role is the amount of training opportunities available. I enjoy adding to my knowledge and right now I'm doing this through the five-year NHS Higher Specialist Scientist Training. This programme will also help me in my long-term career goal to become a consultant clinical scientist.



Physical sciences and clinical engineering: Medical physics

Clinical pharmaceutical science

Name

Shazmeen Hansrod

Job title

Trainee clinical pharmaceutical scientist, Sandwell and West Birmingham Hospitals NHS Trust

Entry route

MChem degree in pharmaceutical chemistry

How I got into the role

At university, I studied for an MChem degree in pharmaceutical chemistry. My initial plan was to study a PhD straight after my course, but towards the end of my final year, the thought of full-time research was no longer appealing. I realised that I wanted a job with variety, so when I came across the NHS Scientist Training Programme (STP), I knew it was something I'd be interested in as it had a good mix of work-based training, research and academia.

What I do

As a trainee pharmaceutical scientist, I get involved with a variety of things. On a typical day, I dispense medication and complete quality assurance documentation. As well as having work-based training, the STP leads to a Master's degree, so on some days I work on my project and assignments and revise for exams. I'm also a STEM ambassador, so I work with young pupils to increase their enthusiasm for science.

"I hope to see my research having an influence on a national scale."



The best bits

One of the best things about my job is the amount of support I am offered. In both my work-based training and independent research, I have had training opportunities that have been instrumental in my professional development. I am proud of how I have developed my skills and become a valued member of staff.

I am also proud of my awards which were presented at the British Nuclear Medicine Society conference. I was awarded first place student prize based on my abstract submission and the radiopharmacy prize for my oral presentation. In the future, I hope to see my research having an influence on a national scale and leading to the standardisation of the gastric emptying scintigraphy procedure, which has been notoriously difficult to standardise.



Physical sciences and clinical engineering: Clinical engineering

Rehabilitation engineering

Name

Rachael Andrews

Job title

Trainee healthcare scientist, Cambridge University Hospitals NHS Foundation Trust

Entry route

MEng in mechanical engineering, including a taught module and final year research project in bioengineering

How I got into the role

Learning about bioengineering in my final year at university inspired me to research careers in engineering applied to medicine. A healthcare science career appealed to me because it provides opportunities to work directly with patients and undertake research.

I decided to apply for the Scientist Training Programme because it allows trainees to experience different areas within their chosen stream before selecting a specialism. The opportunity to study for an MSc while earning a graduate salary is another attractive feature.

What I do

Clinical engineering covers a wide range of disciplines and I have chosen the rehabilitation engineering specialism, which involves assessing a patient's level of function, working alongside doctors, occupational therapists, physiotherapists and physiologists to recommend ways to improve or manage reduced function. I am currently

"I really enjoy working in multidisciplinary teams to solve problems affecting patients."



working in the gait laboratory, and a typical patient appointment involves a clinical engineer taking a patient's history, measuring lower limb segment lengths and passive joint motion ranges, attaching reflective markers for 3D data collection, and recording 2D video and 3D movement data. The clinical engineer then processes the data and writes a report for the referring doctor.

In the first year of my training, I shadowed clinical scientists and other staff members in several departments in my base hospital and also other hospitals across the country. My specialist training involves longer placements which allow me to apply and develop the knowledge and skills I gained through observing staff on my rotational placements.

The best bits

I really enjoy meeting patients and working in multidisciplinary teams to solve problems affecting those patients. Seeing an improvement in a patient's level of function and, in turn, quality of life, is very satisfying.



Physiological sciences: Cardiovascular, respiratory and sleep sciences

Vascular science



Name

Rachel Hadley

Job title

Trainee vascular scientist, Taunton
and Somerset NHS Foundation Trust

Entry route

Biomedical science (anatomy) degree

**"You need to be really passionate
about science because it's all
about continuous learning."**

How I got into the role

I did a biomedical science (anatomy) degree at Cardiff University and then applied to do the three-year NHS Scientist Training Programme. I was attracted to being able to apply my passion for learning and science, and working directly with patients rather than being shut away in a lab.

My degree was anatomy-based which is great because this job involves human anatomy.

What I do

I'm currently in my first year and rotating around different departments - vascular, cardiology and respiratory. Every day is different and I'm learning so much. I'm currently based in the vascular department where I observe and help other vascular scientists to scan patients with ultrasound, helping to diagnose diseases that affect arteries and veins.

The best bits

The best bit of the job is working closely with patients and helping to solve part of the 'puzzle'. I also like it that the ultrasound scan results are instant. There's no waiting around to analyse blood samples; we can see on the screen exactly what is happening in the patient's artery or vein at that moment!

I'm quite shy so am proud of myself for stepping out of my comfort zone to do this role. I know it will stretch me and improve my communication and organisational skills, professionalism and understanding.

We see lots of elderly patients who are very unwell which can be difficult. This first year of the programme is demanding too because I have such a lot to learn and there are lots of exams.



Physiological sciences: Cardiovascular, respiratory and sleep sciences

Cardiac sciences

Name

Samantha Thorn

Job title

Trainee healthcare scientist, University
Hospital of South Manchester NHS
Foundation Trust

Entry route

Healthcare science
(cardiac physiology) degree



**"I am a key part
of the team during
cardiac procedures."**

How I got into the role

From a young age, I was interested in the workings of the heart and chose biology, chemistry and physical education as my A-level subjects.

Doing a clinically-based degree meant there was a lot more to it than lectures and exams.

What I do

I'm qualified to perform a range of diagnostic cardiac tests, such as electrocardiograms (ECGs), exercise tolerance tests and 'tilt' tests, and 24 hour heart monitors.

Every day is different and I interact with patients both in clinics and on the wards.

I am also a key part of the team during cardiac procedures like angiograms, angioplasty (mechanically widening narrowed or obstructed arteries) and pacemaker implantation. I monitor the patient's physiology, using ECG interpretation and blood pressure monitoring from inside the heart.

The best bits

Working in the catheter labs is very exciting, especially during an angioplasty. It's extremely rewarding to know I've played a part in the procedure and helped to stabilise the patient.

Getting started in healthcare science

Whatever your age, education and qualifications, you can join the healthcare science team at a level that's right for you. You'll be given every opportunity to develop your career, if this is what you want. There is on-the-job training for every role, so you can earn while you learn. There's also the chance to study for formal qualifications, including degrees and postgraduate qualifications. Below are some of your options and entry routes.



Work placements and volunteering

Doing volunteer work or arranging a work placement is the best way to find out if a health profession is right for you. It will give you experience of the working environment, show you the kind of work you would be doing and the people you would be helping, and let you talk with people who are already doing the job.

The number and type of work placements or volunteering opportunities available vary, depending on where you are in the country. Experience doesn't always need to be gained in the NHS either, so think about the independent health sector, charities and other organisations where you could provide care for people as a way of gaining experience.

For more information about opportunities in your area, please talk to your local trust and voluntary organisations. You can also find more information on gaining experience at www.healthcareers.nhs.uk/experience



Apprenticeships

Apprenticeships give you the chance to gain invaluable experience of working directly in the healthcare sector and work towards relevant qualifications.

They have been developed at different levels (intermediate, advanced, higher and degree) and in a range of healthcare science areas.

Each health provider/employer decides whether it will offer apprenticeships and so availability will vary.

Entry level roles

You can start as an apprentice, or in a trainee or assistant role, combining study with on-the-job training, so you learn as you earn. If you have GCSEs (or equivalent qualifications at level 2) and/or some work experience, you can apply for a range of assistant roles or apprenticeships, working in laboratories, wards and outpatient departments with clinical staff and equipment.

You will train while you work, by attending day or short residential courses that will be organised for you. Your training can last from a few months up to two years, depending on the role you choose.

Apprenticeship vacancies in health can be found on the NHS Jobs website www.jobs.nhs.uk and the government Apprenticeships website www.gov.uk/apply-apprenticeship

More information on apprenticeship opportunities in health is available at www.healthcareers.nhs.uk/apprenticeships

With A-levels or an equivalent qualification at level 3, you can start your career as a trainee or a higher apprentice. As well as working and getting practical training on the job, you may be able to study for a degree or other professional qualifications in a specific area of healthcare science.

Undergraduate opportunities

Undergraduate training in healthcare science has undergone considerable change. Three-year accredited BSc Hons healthcare science degree courses (the Practitioner Training Programme) are available where you can train for positions as a healthcare science practitioner in life sciences, physiological sciences, medical physics and clinical engineering.

These programmes include 50 weeks of work-based experience in the NHS, and you will become increasingly specialised in the second and third years towards your chosen career path. Healthcare science practitioners perform a range of complex clinical, scientific and technical procedures. They are accountable for their own actions and for staff that they direct or supervise.

Some degree-level apprenticeships in healthcare science have become available recently, for example within physical sciences and clinical engineering. Other areas of healthcare science are likely to follow suit.

Search for accredited BSc (Hons) healthcare science degrees at www.healthcareers.nhs.uk/courses

For more information about undergraduate healthcare science training in the NHS, visit www.healthcareers.nhs.uk/ptp

Opportunities for graduates

If you have a degree in a relevant science or engineering subject, you can apply to join the NHS Scientist Training Programme (STP). This is a three-year, work-based training programme in a specialism of healthcare science. There is an annual national intake and you would be employed in a fixed-term training post working through a series of structured work placements as you learn in the workplace. Participants are given time to study for an MSc in their chosen specialism. Successfully completing the STP gives the opportunity to register as a clinical scientist and to work at the forefront of medical knowledge and research.

Higher Specialist Scientist Training (HSST) enables experienced and registered clinical scientists to work at consultant level. These individuals are trained in leadership and innovation as well as scientific and clinical expertise, and will play key roles in the future NHS. Staff doing HSST will study for Royal College exams.

For more information about postgraduate healthcare science training in the NHS, visit www.healthcareers.nhs.uk/stp

Funding

The NHS does not fund students on full-time undergraduate healthcare science degrees in England. There is currently financial support available for students taking healthcare science degrees in Wales. You should check directly with the university to see if any funding is available from other sources.

Trainees going through the Scientist Training Programme and Higher Specialist Scientist Training are usually salaried.

For more information about Higher Specialist Scientist Training in the NHS, visit www.healthcareers.nhs.uk/hsst

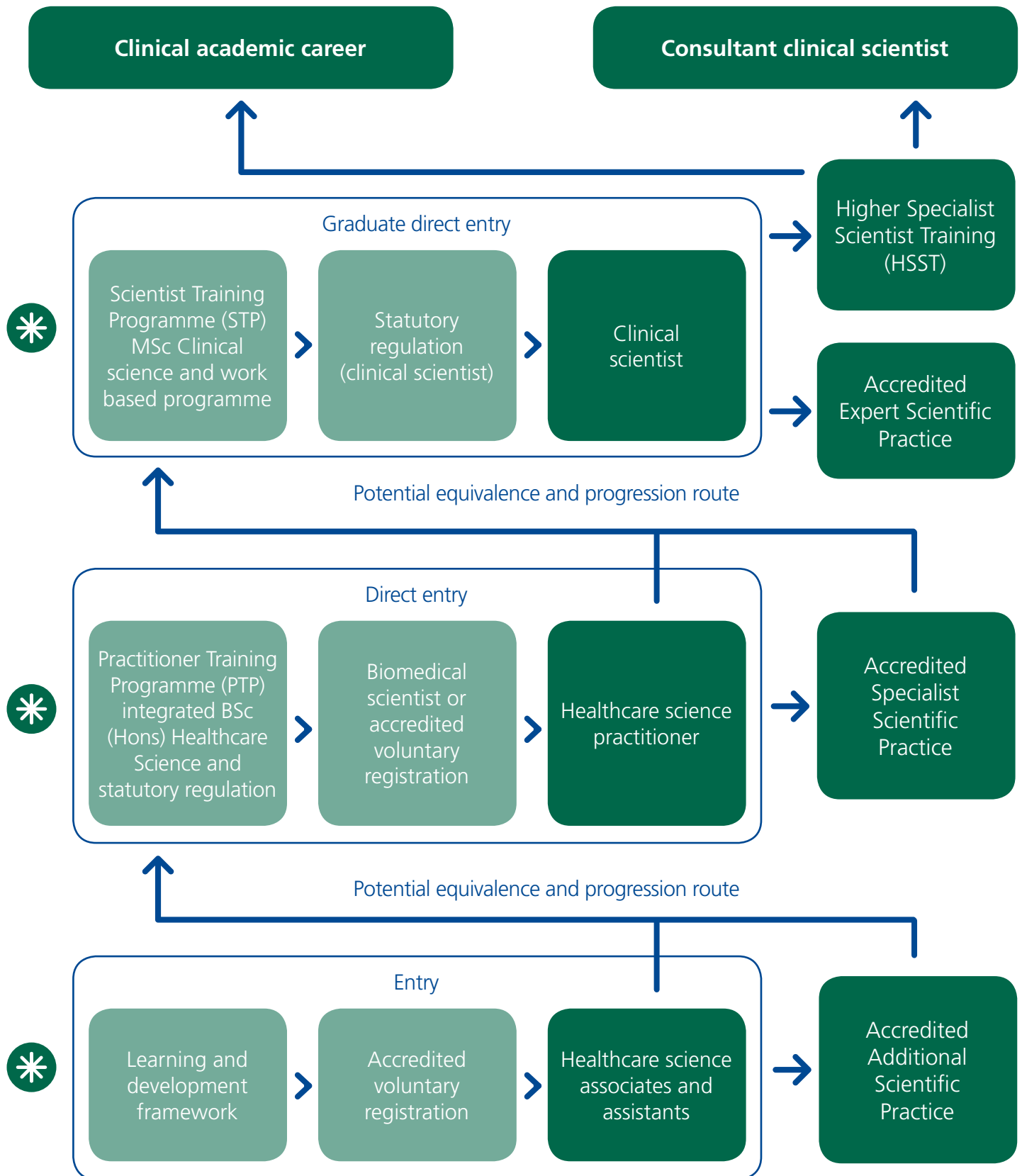
Remember that if you're applying for a role either directly in the NHS or in an organisation that provides NHS services, you may be asked to show how you think the values of the NHS Constitution apply in your everyday work.

Find out more at:

 www.healthcareers.nhs.uk/nhsconstitution

 www.healthcareers.nhs.uk/6Cs

Healthcare science career and training pathways



* You can enter healthcare science at any of these levels

Source: www.dh.gov.uk

Next steps and progressing your career

If you want to work in health, it's important to find out as much information as you can about the qualifications you need and the opportunities that are available.



If you need a degree, UCAS can advise on which universities offer the relevant courses. Each university will be able to tell you what they look for in applicants. For example, getting some work experience is an excellent way of showing your commitment and enthusiasm. You can also use the course finder on our main website www.healthcareers.nhs.uk/courses to find accredited degree courses in healthcare science for the Practitioner Training Programme.

If you are already working, but thinking about a change of career, consider volunteering in your spare time. This is a great way to find out if you like the work, and can sometimes lead to a more permanent position.

Here is a checklist of things you should be doing, whether you're still at school, studying for your degree or looking for a change of career:

- Have you explored routes into your chosen career? Will you need a degree or other qualification before you join, or will the NHS train you on the job? There may also be the opportunity to start as an assistant or through an apprenticeship.
- Are there any particular skills or experience that will improve your chances of getting into your chosen career?
- Have you enquired about opportunities to volunteer or do relevant work experience?
- Have you searched the NHS Jobs website or spoken to your local healthcare providers to get an idea of the type of vacancies available?
- Make sure you keep up to date with any changes to healthcare science education and training opportunities by looking on the Health Careers website

Use our course finder to search for universities offering accredited BSc (Hons) healthcare science courses
www.healthcareers.nhs.uk/courses

To search for jobs in healthcare science, go to www.jobs.nhs.uk

Whatever position you're in right now, the Health Careers service can help point you in the right direction. Call us on **0345 60 60 655**, email advice@healthcareers.nhs.uk or visit our website at www.healthcareers.nhs.uk

Here are some other things you can be doing, depending on where you are right now:

Where are you now?	What should you do now?	Who can help?
Studying for your GCSEs	<ul style="list-style-type: none"> ➤ Check what your likely exam grades/results will be. ➤ Consider the option of a healthcare science apprenticeship. ➤ Explore routes into your chosen career – will you need a degree or other qualification before you join, or will the NHS train you on the job? Can you start as an assistant? Are apprenticeships available in your area? ➤ Are there any particular skills or experience that will improve your chances of getting into your chosen career? ➤ Enquire about volunteering or work experience. ➤ Find out if you need any specific A-levels, or equivalent qualifications at level 3. 	Subject teachers Your careers adviser Professional bodies Health Careers National Careers Service National Apprenticeship Service
Studying for A-levels or another course at your school or a local college	As GCSEs, plus: <ul style="list-style-type: none"> ➤ Search www.healthcareers.nhs.uk/courses for BSc (Hons) degrees in healthcare science. ➤ Investigate any further qualifications you might need for your chosen role. ➤ Search the NHS Jobs website at www.jobs.nhs.uk and speak to your local healthcare provider to get an idea of current job and apprenticeship vacancies. 	Subject teachers Your careers adviser UCAS Health Careers Professional bodies National Careers Service National Apprenticeship Service
At university	As A-levels, plus: <ul style="list-style-type: none"> ➤ Find out more about the Scientist Training Programme (STP) from the Health Careers website. 	University careers service Health Careers Professional bodies NHS Jobs National School of Healthcare Science
Looking for a new career	As A-levels, plus: <ul style="list-style-type: none"> ➤ Find out if you will need to retrain before you apply for new roles or if the NHS will train you while you are working. 	Careers service Health Careers Professional bodies Jobcentre Plus NHS Jobs UCAS National Careers Service



Fulfil your potential

The NHS is committed to offering development and learning opportunities for all full-time and part-time staff. If you work for the NHS, no matter where you start, you'll have access to extra training and be given every chance to progress within the organisation. You'll receive an annual personal review and development plan to support your career progression.

You will also be encouraged to extend your range of skills and knowledge and take on new responsibilities through the Knowledge and Skills Framework (KSF). The KSF is

available on the NHS Employers website:
[**www.nhsemployers.org/SimplifiedKSF**](http://www.nhsemployers.org/SimplifiedKSF)

The examples career routes on p.34-35 make it easy to see at a glance how you can progress within your chosen career.

Other organisations that provide healthcare and work to prevent ill health will offer similar development opportunities and the chance to review your work. It's a good idea to discuss career development with any employer you are considering.



Benefits of working in the NHS

As a healthcare scientist in the NHS, you will enjoy one of the most competitive and flexible benefits packages offered by any employer in the UK and a wealth of opportunities to develop your career. You will join one of the country's most respected organisations and one which has the values of compassionate care and staff wellbeing at its very heart.

If you work as a healthcare scientist in the private or voluntary sectors or another public sector organisation, your pay and benefits will vary depending on your employer.



Your pay as an NHS healthcare scientist

Most jobs are covered by NHS terms and conditions of service (Agenda for Change) pay bands, except doctors, dentists and very senior managers. The NHS job evaluation system determines a points score, which is used to match jobs to pay bands and determine levels of basic salary. Each pay band has a number of pay points. Staff will normally progress to the next pay point annually until they reach the top of the pay band.

Your career in healthcare science could begin as a healthcare science assistant at AfC band 2,

rising to consultant clinical scientist at bands 8c – 9, with roles between depending on knowledge, training and experience.

For example, the typical AfC banding for a healthcare science practitioner in pathology is band 5, an entry-level cytology screener is band 3 and a medical engineering team manager is band 7.

For more information on NHS pay bands and the most up-to-date salary information in your chosen career, visit www.healthcareers.nhs.uk/pay





One of the UK's best pension schemes

The NHS Pension Scheme is one of the most generous in the UK. Every new employee automatically becomes a member, unless you choose to opt out.

Other employment benefits for NHS staff

Everyone employed under the NHS Agenda for Change pay system is entitled to:

- a standard working week of 37.5 hours
- holiday entitlements of 27 days per year, plus eight general and public holidays, rising to 33 days after ten years' service
- pay enhancements to reward out-of-hours, shift and overtime working
- career and pay progression based on the application of knowledge and skills
- annual personal development review to support your career
- occupational health services
- study leave for sponsored courses

Many of these benefits apply across the whole of the NHS, although local organisations may offer additional benefits such as cycle to work schemes and nurseries. Many local shops, restaurants and services offer discounts to health staff too, including most gyms and leisure centres. Health Service Discounts is an employee benefit provider for many NHS organisations and offers discounts and deals for NHS staff on shopping, holidays and financial services from well-known brands:

www.healthservicediscounts.com

Health and wellbeing at work and your work-life balance

The NHS is committed to helping staff to stay well, including serving healthier food, promoting physical activity, reducing stress, and providing health checks covering mental health and musculoskeletal problems.

The NHS will help you combine your work with commitments in your everyday life and at different stages of your career - whether you're studying for a new qualification, raising a family or have other responsibilities.

The size and diversity of the NHS means we can offer you a range of flexible working and retirement opportunities. Part-time roles and job-share opportunities are often available, as well as term-time only, evening and weekend positions. Many people take an extended break to look after young children or other dependants who need special care, or to study full-time.

As well as advice and support for people looking after sick or elderly relatives, the NHS provides a range of childcare services for employees, including:

- nursery care
- after-school and breakfast clubs
- holiday play schemes
- emergency care

You can find more information on health and well-being at work at www.nhsemployers.org/healthyworkplaces

Get more information about the benefits and opportunities offered by the NHS at www.healthcareers.nhs.uk/payandbenefits

Example career routes

The diagram on pages 34 and 35 has been designed to provide examples of how staff can progress throughout their career in health.

It gives an illustration of a range of health careers and how someone could progress through different levels. It is not exhaustive; details on other careers

can be found in the relevant Health Careers booklets and on the Health Careers website.

The real-life story on page 20 describes how Ronnie Wright has progressed within healthcare science. You can follow his career path in the white boxes on the diagram, alongside other potential paths in the different areas of health.



	Initial entry level jobs	Support workers	Senior healthcare assistants/technicians	Assistant practitioners/ Associate practitioners	Practitioners	Senior practitioners/ specialist practitioners	Advanced practitioners	Consultant practitioners	More senior staff
Allied health professions		Therapy clinical support worker	Occupational therapy rehabilitation assistant	Assistant practitioner in occupational therapy	Occupational therapist	Senior occupational therapist	Advanced occupational therapist (team leader)	Consultant occupational therapist	
Ambulance service team		Patient transport service driver	Emergency medical dispatcher	Control room duty officer	Paramedic	Specialist paramedic	Advanced paramedic	Consultant paramedic	Clinical director of service
Dental care team		Dental nurse	Student dental technician	Assistant dental technician	Dental technician	Senior dental technologist			
Health informatics	Health records assistant	Support desk assistant	Medical records clerk	Helpdesk adviser	Web developer	Special projects manager	Head of communications	Access, booking and choice manager	Director of information management and technology
Healthcare science		Phlebotomist	Newborn hearing screener	Genetic technologist	Trainee clinical scientist	Clinical scientist (genomics)	Higher Specialist Scientist trainee	Consultant clinical scientist (medical physics)	Director of regional genetics services
Management				General office manager	Payroll manager	Projects manager	Head of accounts	Maxillofacial laboratory manager	Director of human resources
Midwifery		Healthcare assistant (maternity)	Maternity support worker		Midwife	Community midwife	Head of midwifery	Consultant midwife	Director of maternity services
Nursing	Nurse cadet	Healthcare assistant (nursing)	Senior healthcare assistant	Community care assistant	Staff nurse	Senior staff nurse	Clinical charge nurse	Nurse consultant in stroke	Director of nursing
Pharmacy	Pharmacy porter	Medicines counter assistant	Senior pharmacy assistant	Pharmacy technician	Pre-registration pharmacist	Pharmacist		Lead pharmacist for admissions	Director of clinical support services
Psychological therapies		Healthcare assistant (mental health)	Mental health support worker	Assistant clinical psychologist	Psychological wellbeing practitioner	High intensity therapist		Consultant clinical psychologist	Assistant director - clinical professional practice
Public health	Young health champion	Health champion	Health trainer	Stop smoking adviser	Health improvement practitioner	Senior health improvement practitioner	Specialty registrar in public health	Public health consultant	Director of public health
Wider healthcare team	Porter	Maintenance assistant	Security officer	Medical secretary	Catering manager	Chaplain	Head of estates		

**For further copies of this
booklet please contact:**

Tel: 0345 60 60 655

email: advice@healthcareers.nhs.uk

www.healthcareers.nhs.uk

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