

## What do Healthcare Scientists do?

Healthcare Scientists play a vital role in investigation, diagnosis, treatment and aftercare.

Some Healthcare Scientists have direct contact with patients; whilst other Healthcare Scientists are based in laboratories and may not directly interact with patients. Regardless of where they are based, Healthcare Scientists contribute to and affect the care that patients receive. Healthcare Scientists are involved in 80% of all clinical decisions in the NHS.

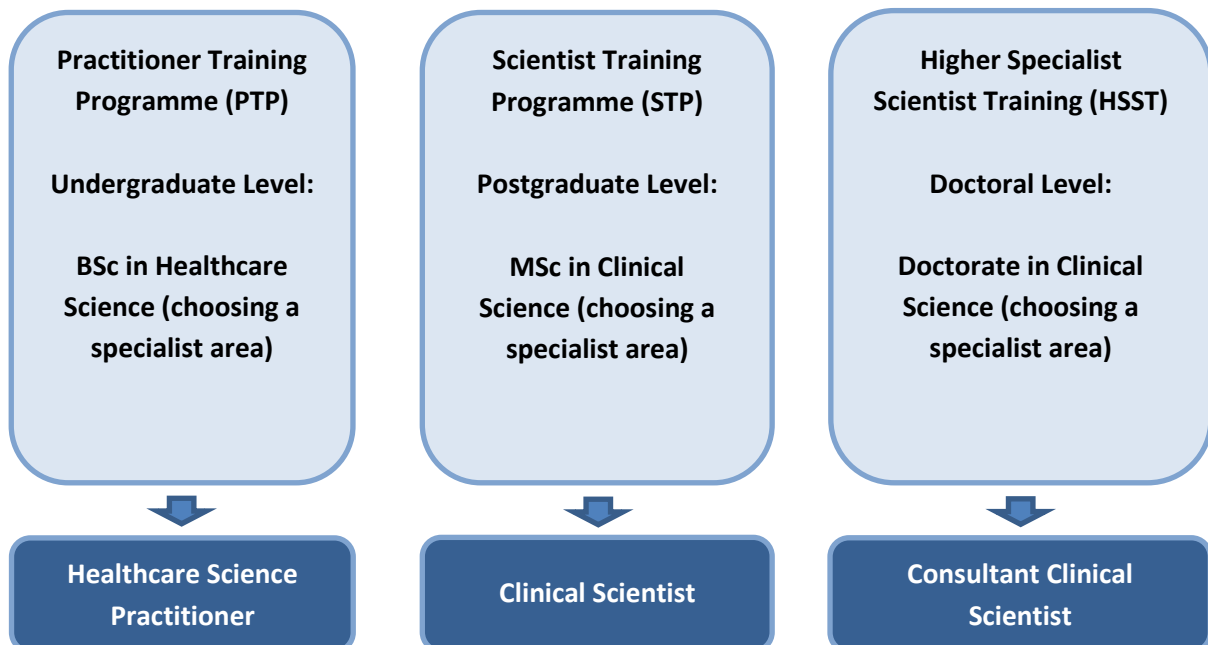
A Healthcare Scientist's work may involve:

- Generating and obtaining scientific information.
- Interpreting test results.
- Suggesting methods of treatment to doctors.
- Researching, developing and testing new methods of diagnosis and treatment.

## Training and job roles

There are a number of different routes into Healthcare Science job roles. The training routes below all involve time working within the NHS, as well as academic study.

Within England, the Modernising Scientific Careers programme was established in 2008 by the Department of Health. Modernising Scientific Careers (MSC) ensures that education and training for the Healthcare Science workforce is consistent and coherent across a wide range of specialisms. All of the training routes below fall under Modernising Scientific Careers.



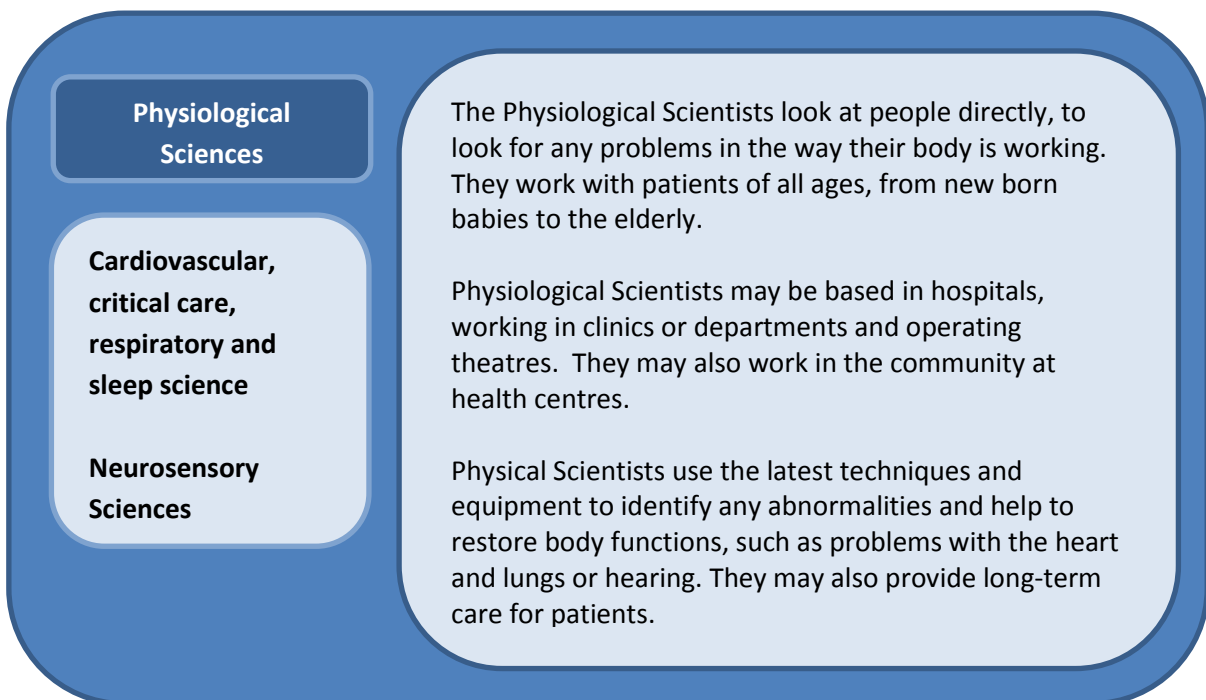
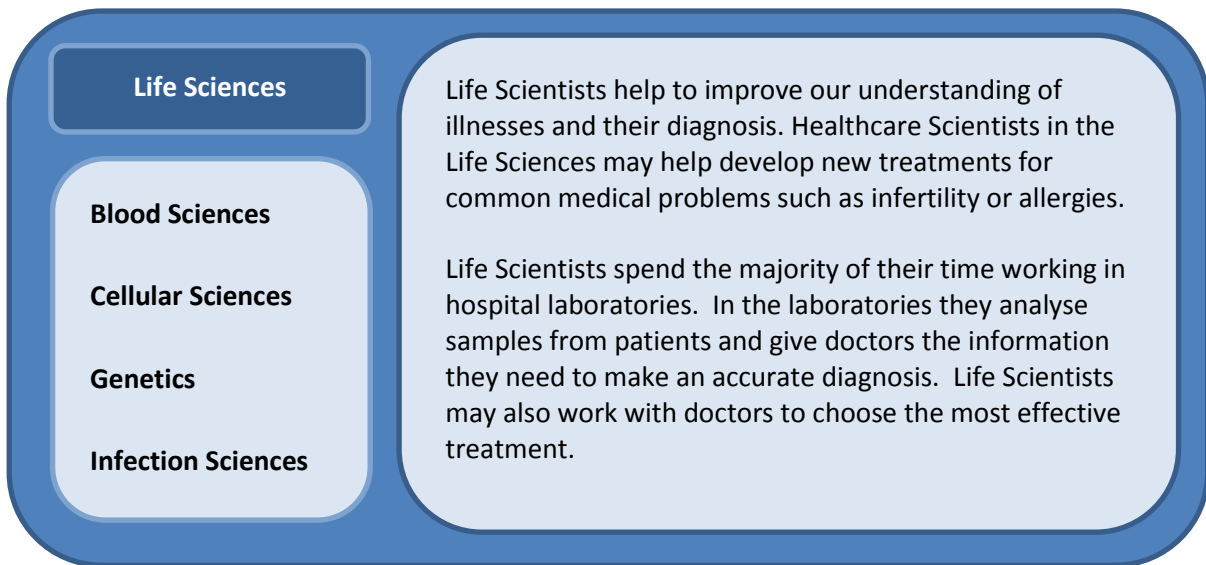
## Find out more...

Click on the links in the bubble below for further information on careers routes and training



## Specialist subjects within Healthcare Science

The diagram on the following two pages shows the main themes within Healthcare Sciences, including some of specialist subject groups within each theme and an overview of what each area broadly involves.



### Physical Sciences

#### Medical Physics

#### Clinical Engineering

Physical Scientists work closely with other NHS clinical teams and in some roles will have direct contact with patients.

They are responsible for developing new techniques and technology to measure what is happening in the body (ultrasound, radiation, magnetic resonance) to explore or record the workings of the body.

They may also ensure complex equipment is set up, maintained and used safely.

### Informatics

#### Clinical Bioinformatics

Within Bioinformatics Scientists develop and improve methods for acquiring, storing, organising and analysing biological data that supports the delivery of patient care.

Bioinformatics Scientists use computer science, including software tools that generate useful biological knowledge by manipulating 'big data'.

**Find out more...** Click on the link in the bubble below to access information about the curriculums for the different Healthcare Sciences.

[NHS Networks \(Curricula\)](#)

## Life Sciences

The table below gives examples of roles and responsibilities for the different specialisms with the Life Sciences.

<b>Specialism:</b>	<b>Example roles and responsibilities</b>
<b>Blood Science:</b>	
Clinical Biochemistry	Analysing patients' samples to help with the diagnosis and management of their condition.
Clinical Immunology	Helping to diagnose and monitor conditions that attack the immune system, such as allergies or HIV.
Haematology / transfusion	Diagnosing and monitoring blood disorders such as leukaemia, anaemia and haemophilia.
Histocompatibility	Preparing suitable tissue for organ and bone marrow transplants.
<b>Cellular Science:</b>	
Reproductive Science	Dealing with infertility treatments such as in-vitro fertilisation (IVF).
Cytopathology	Study of a cervical smear, to identify any cancerous/pre-cancerous cells.
Histopathology	Examining tissue samples to reveal the structure of cells and tissues. For example, looking at a mole removed from a patient.
<b>Genetics:</b>	
Genetics	Examining patients' DNA to find inherited conditions and to predict likelihood of them being passed on to the next generation.
<b>Infection Sciences:</b>	
Microbiology / Virology	Studying bacteria, viruses, fungi and parasites that cause infection.

## Healthcare Scientists are involved at each stage...

Below is an example of how a Blood Scientist might be involved in a patient's treatment.

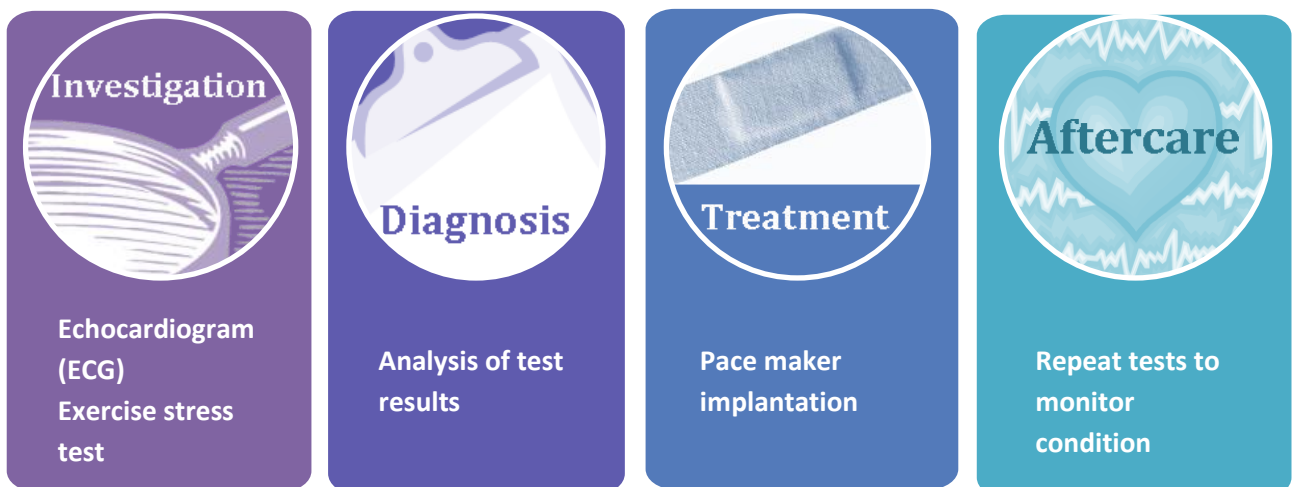


## Physiological Sciences

Specialism:	Example roles and responsibilities
<b>Cardiovascular, Critical Care, Respiratory and Sleep Sciences:</b>	
Cardiac Science	To test for suspected or known heart disease. Symptoms and tests can focus on diagnosis (e.g. chest pain) or monitoring of known pathology (e.g. heart failure, heart valve disease).
Vascular Science	To investigate circulation of blood and to diagnose any abnormalities and health conditions related to the arteries and veins.
Respiratory and Sleep Physiology	Use lung tests to assess patients with shortness of breath and to determine overall lung performance. Monitor sleep disordered breathing – a common condition related to obesity and upper airway malformation.
Critical Care	Provide life support systems to critically ill patients.
<b>Neurosensory Sciences:</b>	
Audiological Sciences	Measuring and evaluating people’s hearing and balance. Fitting hearing devices.
Ophthalmic and Vision Sciences	Investigating eye and vision disorders.
Neurophysiology	Investigate the function of the nervous system to diagnose and monitor neurological disorders such as epilepsy, strokes, dementia, nerve and muscle dysfunction and multiple sclerosis (MS).
<b>Gastrointestinal and Urological Sciences:</b>	
Gastrointestinal and Urological Sciences	Measuring and assessing the activity in the digestive system. Providing treatment to improve patient’s muscle tone.

## Healthcare Scientists are involved at each stage...

Below is an example of how a Cardiac Scientist might be involved in a patient’s treatment.



## Physical Sciences

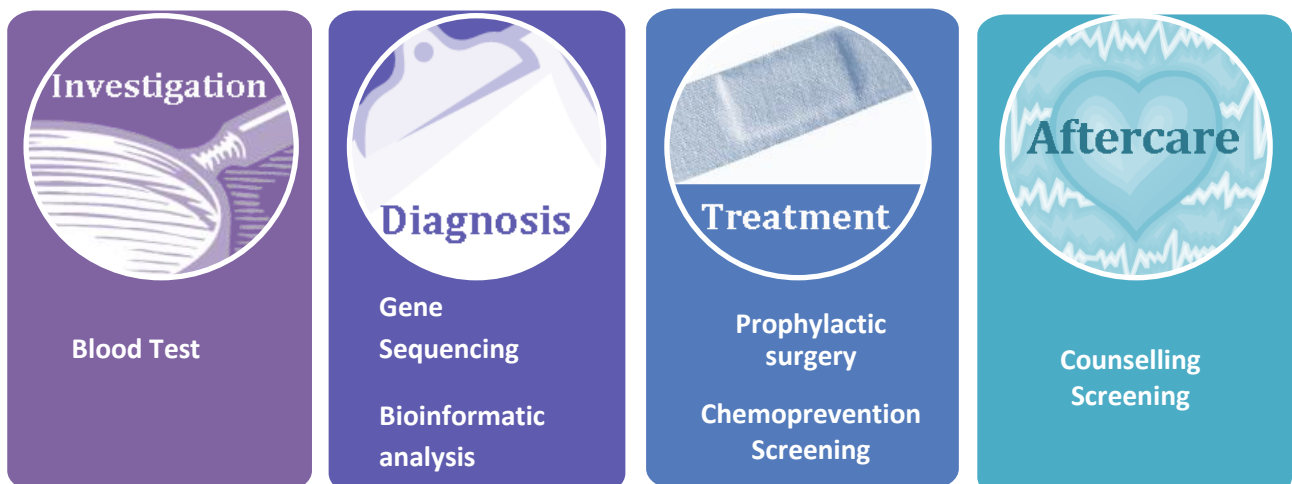
Specialism:	Example roles and responsibilities
<b>Medical Physics:</b>	
Radiotherapy Physics	Maintaining the precision and accuracy of radiation treatments for cancer.
Radiation Safety	Ensuring the safety of patients and staff in areas where radiation is used by monitoring dose levels.
Imaging with Ionising and Non-Ionising Radiation	Diagnostic images such as ultrasound (e.g. during pregnancy), magnetic resonance imaging (MRI) and X-rays of tissues or organs in the body.
<b>Clinical Engineering:</b>	
Clinical Engineering	Designing equipment for monitoring, diagnosis, treatment and rehabilitation.
Rehabilitation Engineering	Assessment of the individual needs of disabled people and the prescription of assistive technology to meet those needs, including the design and development of custom made devices/systems.
Clinical Measurement & Development	Make clinical measurements of patients, for example analysing how children walk.
Device Risk Management & Governance	Ensuring medical equipment is installed, used and maintained correctly and advising on procurement of new equipment.
<b>Clinical Pharmaceutical Science:</b>	
Clinical Pharmaceutical Science	Manufacturing and supplying radioactive substances for use in nuclear medicine.

## Informatics

Specialism:	Example roles and responsibilities
<b>Clinical Bioinformatics</b>	
Genomics	Supporting the 100,000 Genomes Project, connecting computing, biology and medicine.
Health informatics	Ensuring that bioinformatics data is used efficiently and to required standards.

## Healthcare Scientists are involved at each stage...

Below is an example of how a Clinical Bioinformatician might be involved in a patient's treatment.



## What are we looking for in a lay representative?

	Essential attributes	Desirable attributes
<b>Experience</b>	<ul style="list-style-type: none"> <li>- A user of NHS services</li> <li>Or</li> <li>- Current or previous experience as a Carer</li> <li>(you may fit into both roles)</li> </ul>	<ul style="list-style-type: none"> <li>- Membership (previous or current) of a patient group</li> </ul>
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>- An interest in one or more of the educational programmes provided in Manchester</li> </ul>	<ul style="list-style-type: none"> <li>- Able to understand educational and scientific information</li> <li>- Knowledge of Healthcare Sciences</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>- Able to communicate in a professional manner, both verbal and written, with a wide range of people</li> <li>- Respect for the views of others</li> </ul>	<ul style="list-style-type: none"> <li>- Creative/Imaginative</li> </ul>

## How can a lay representative be involved in a programme?

As a minimum we would expect volunteers to commit to four half days each year. However, we will contact you each time that we have an appropriate involvement activity.

Patient involvement in education can include a number of things, such as a patient:

- Sharing their story and experiences with learners
- Bringing their experience to learning groups
- As a simulated or volunteer patients in a learning environment or as a form of assessment
- Be involved in creating and providing comment on learning materials e.g. paper-based, electronic case studies or scenarios, course materials, videos etc.
- As teachers and assessors or evaluators involved in teaching or assessment of students/learners
- As partners in student education, assessment and curriculum development with equal input
- Contribute to developing the MAHSE Patient and Public Involvement Strategy
- Involved in decision making at the institutional level e.g. student selection (where applicable), programme committee (see below for more information)

## Participating in programme committees

It is anticipated that you will be expected to attend programme committees (once or twice a year) as well as the MAHSE Patient Forum (which meets twice each year). The format of programme committees may vary between each of the three Universities. Some committees may consider a single programme, others may discuss multiple programmes.

The basic terms of reference are:

- Improving the student experience
- Producing an action plan to improve quality
- Considering feedback from students, external examiners, employers, professional bodies and lay representatives

The following people are normally involved:

- Chair
- Key members of academic staff (Programme Leader, Course unit/module leaders)
- Student representatives
- Lay representatives

## Payment details

### Payment for time

Lay Representatives are paid at a rate of £18.81 per hour. For one-off payments this can be paid in cash but for regular involvement Lay Representatives are set up as casual workers. This is necessary for HMRC (Tax/Ni) compliance. MAHSE will provide guidance on completing the relevant paperwork and there are many benefits of being a casual worker:

- You will receive paid annual leave (1 hour for every 8.3 hours worked)
- Tax/Ni is taken off automatically
- Payment is made directly into your bank account

Lay Representatives complete a timesheet (known as a CAS4 form) which is signed and dated each time they carry out work at the University.

### Payment for expenses

All Lay Representatives will receive cash on the day for any reasonable travel expenses such as bus fare, train fare, car mileage, taxi fare and parking. You will be given a short form (like the one below) to complete and will need to hand in any receipts or tickets that you have used. If you have a return ticket then we will take a photocopy of this for our records so that you can use the ticket to get home. Similarly if you have a single bus ticket then we will assume that your return fare will be the same and give you the full amount up front.

<b>Patient and Public Involvement</b>	
<b>Name:</b>	
<b>Expenses incurred:</b>	Bus travel:
	Car parking charges:
	Mileage (40p for first 150 miles and 25p thereafter):
	Rail travel:
	Taxi hire:
	Other ( <i>please specify</i> ):
<b>Confirmation:</b>	I confirm that I have received a total of £ ____:____ for work in connection with the MSc Clinical Science programmes.
	<b>Signed:</b> _____ <b>Date:</b> _____