

# Clinical biochemistry and analytical toxicology

Join the team and  
make a difference

**Biochemistry involves the analysis of tissue samples to help with the diagnosis and management of a huge range of medical conditions. Analytical toxicology is a specialist area focused on measuring drugs or poisons in a patient's system.**

## What will you do?

In **clinical biochemistry**, you will analyse blood and body fluids from patients. You will play a vital part working closely with doctors, nurses and other healthcare professionals, as the treatment of their patients is often based on the results of investigations carried out by you. Hospital departments such as A&E and operating theatres will be dependent on your work, for example measuring kidney or liver function, testing for cancer markers, diabetes and heart disease. A key part of the work will also be to choose which tests are needed in different circumstances, and prepare samples for analysis. It's crucial to take the right samples to get accurate results. The majority of samples will be blood, but you will also test urine and faeces, other bodily fluids and, occasionally, tissue.

Many tests are now automated, so much of your day-to-day work will be centred around highly complex automated equipment and computers. Automation speeds up the process and enables results to be cross-referenced with electronic patient records. However, some tests must still be done manually, and it's vital to have a good knowledge of these complex processes – such as molecular biology.



When the results come back, you will use them to help other clinicians make accurate diagnoses, then recommend how best to monitor and manage conditions. Clinicians of all types, including surgeons, GPs and nurses, rely on the findings from the clinical biochemistry laboratory.

How much patient contact you have will depend on what specific conditions and tests you specialise in. Some tests, such as those for blood glucose at diabetic clinics and test of cholesterol at lipid clinics, are carried out when the patient is present – often called point-of-care testing. You will

also be involved in training non-laboratory staff to use test equipment in wards, clinics and surgeries.

The work **analytical toxicologists** do is applied in the management of medical conditions and sometimes used as evidence in court. If you specialise in this area, your work will break down into three key areas:

- checking if suspected drug users have taken illegal substances. As well as a vital part of drug rehabilitation, these findings could be used in court cases
- assessing whether patients have been poisoned due to a drug overdose or exposure to dangerous substances. As part of this work, you will need to monitor environments, such as building sites, to establish if people are at risk from dangerous chemicals
- measuring how much of a certain drug someone has in their system. This can determine if people are being given the right amount of medication.

As a toxicologist, you might also contribute to a post-mortem, helping to establish if cause of death was drug-related. Therefore, as well as working with clinicians of all types, you may come into daily contact with pathologists and coroners, the police, courts and social services.

### **What entry routes are available?**

To work as a biomedical scientist in clinical biochemistry, you'll need a biomedical science degree approved by the Health Professions Council before applying for a post as a trainee biomedical scientist. After joining the NHS, you will receive training in all areas of clinical biochemistry. The training will take up to two years and will enable you to register with the Health Professions Council.



If you have a first-class or upper second-class degree in a relevant subject, you may be eligible to join the NHS Clinical Scientists Training Scheme. This is a four-year programme of in-depth training in a specialist area, during which you will be paid whilst undertaking the clinical elements of your training. Some employers may also pay your tuition fees and offer financial support while you undertake theoretical academic elements of your training. This will usually lead to an MSc or specialist postgraduate



diploma, and give you the opportunity to work at the forefront of research and knowledge as a clinical scientist registered with the Health Professions Council. For more information, visit [www.nhscinicalscientists.info](http://www.nhscinicalscientists.info)

With GCSEs or an equivalent NVQ and/or previous work experience it is often possible to start work as a trainee or assistant in healthcare science, combining on-the-job training with study so that you learn as you earn. For more information, see the *Clinical support worker* factsheet.

Some employers also offer cadet schemes, which involve a two-year training programme that gives you experience of different jobs within healthcare science.

For more information on the range of opportunities available in healthcare science, please visit [www.nhscareers.nhs.uk/list/qualifications](http://www.nhscareers.nhs.uk/list/qualifications). This gives more specific details about what qualifications are necessary for each role. You can search for current vacancies and download job descriptions at [www.jobs.nhs.uk](http://www.jobs.nhs.uk)

#### Where will you work?

You will be based in a laboratory, within a hospital.

For certain tests, if the patient needs to be present, you may need to work in clinics or on wards in the hospital.

In toxicology you may also need to work outside the hospital, monitoring working or living conditions for any poisonous substances.

#### What skills and qualities will you need?

- an interest in science
- good communication skills – written and oral
- IT skills – much of the work is now automated
- accuracy and attention to detail
- good logic and reasoning
- ability to work well as part of a team

### How can you develop your career?

There are excellent career prospects that include openings for research, management and education – in fact, you will be encouraged to study, perhaps for an MSc or PhD. You will be encouraged to continually expand your knowledge as advances are made, contributing to the growth of the role, and you may even carry out related specialised work.

With training, responsibility and experience, you could reach the highest level in the profession, attaining consultant status, at which level you are likely to be in charge of a large department or making a significant contribution to your area of expertise.

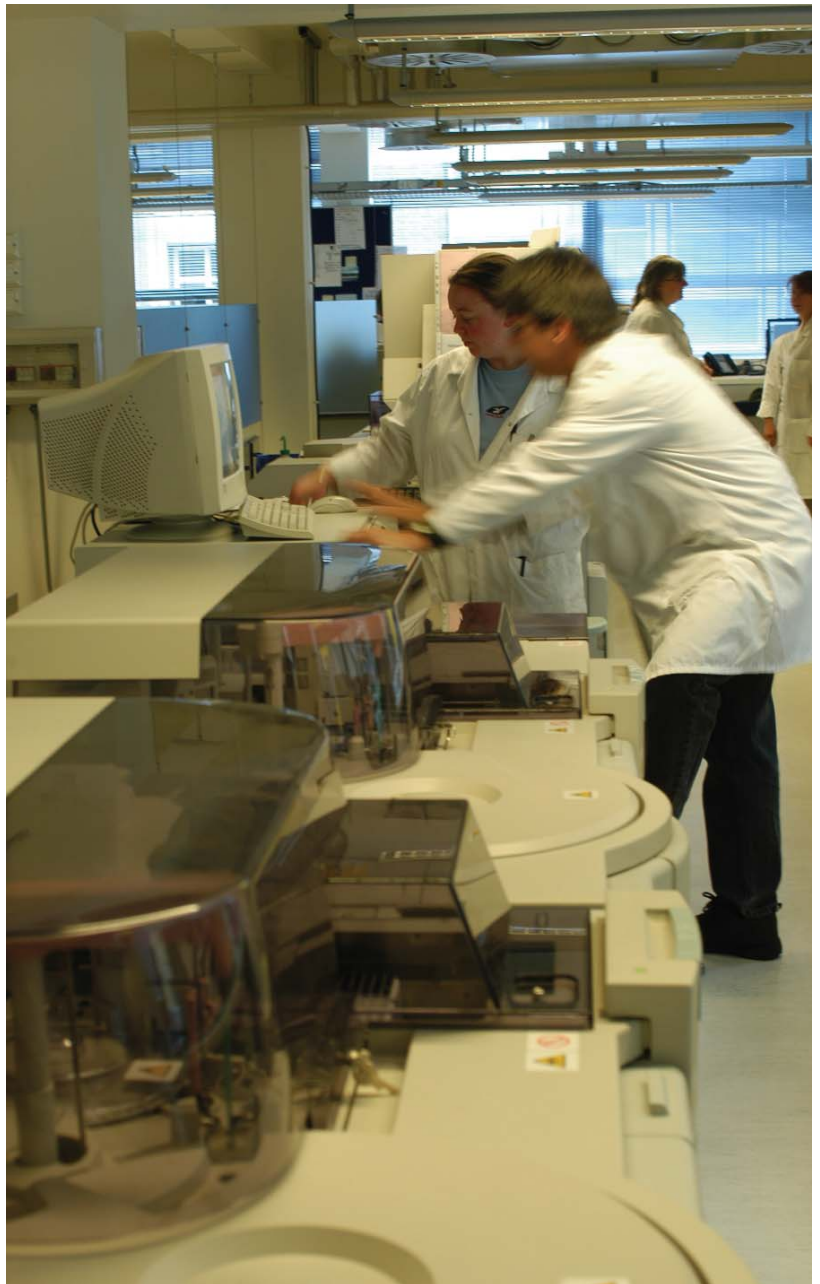
Find out more about what training is open to you and how you can develop your career, at [www.nhscareers.nhs.uk/list/training](http://www.nhscareers.nhs.uk/list/training)

As well as moving to more senior and specialised roles within this area, you will also have the chance to take on additional responsibilities and progress within the organisation as part of the Career Framework. For more information about this initiative, please see the *Careers in healthcare science* booklet.

### Pay

The national pay system in the NHS is called Agenda for Change (AfC). This applies to all healthcare science staff except the most senior managers. These are examples of roles and the AfC bands at which they may be paid: healthcare science support worker (Band 2); healthcare science assistant (Band 4); healthcare science practitioner (Band 5); healthcare science specialist (Band 6); healthcare science advanced (Band 7); healthcare science consultant (Band 8a-c). For more information, visit

[www.nhscareers.nhs.uk/list/payandbenefits](http://www.nhscareers.nhs.uk/list/payandbenefits)



To find out more about careers in this area of healthcare science, please go to [www.nhscareers.nhs.uk/list/working](http://www.nhscareers.nhs.uk/list/working)

For more information on the professional bodies relevant to healthcare science, visit [www.nhscareers.nhs.uk/list/contacts](http://www.nhscareers.nhs.uk/list/contacts)