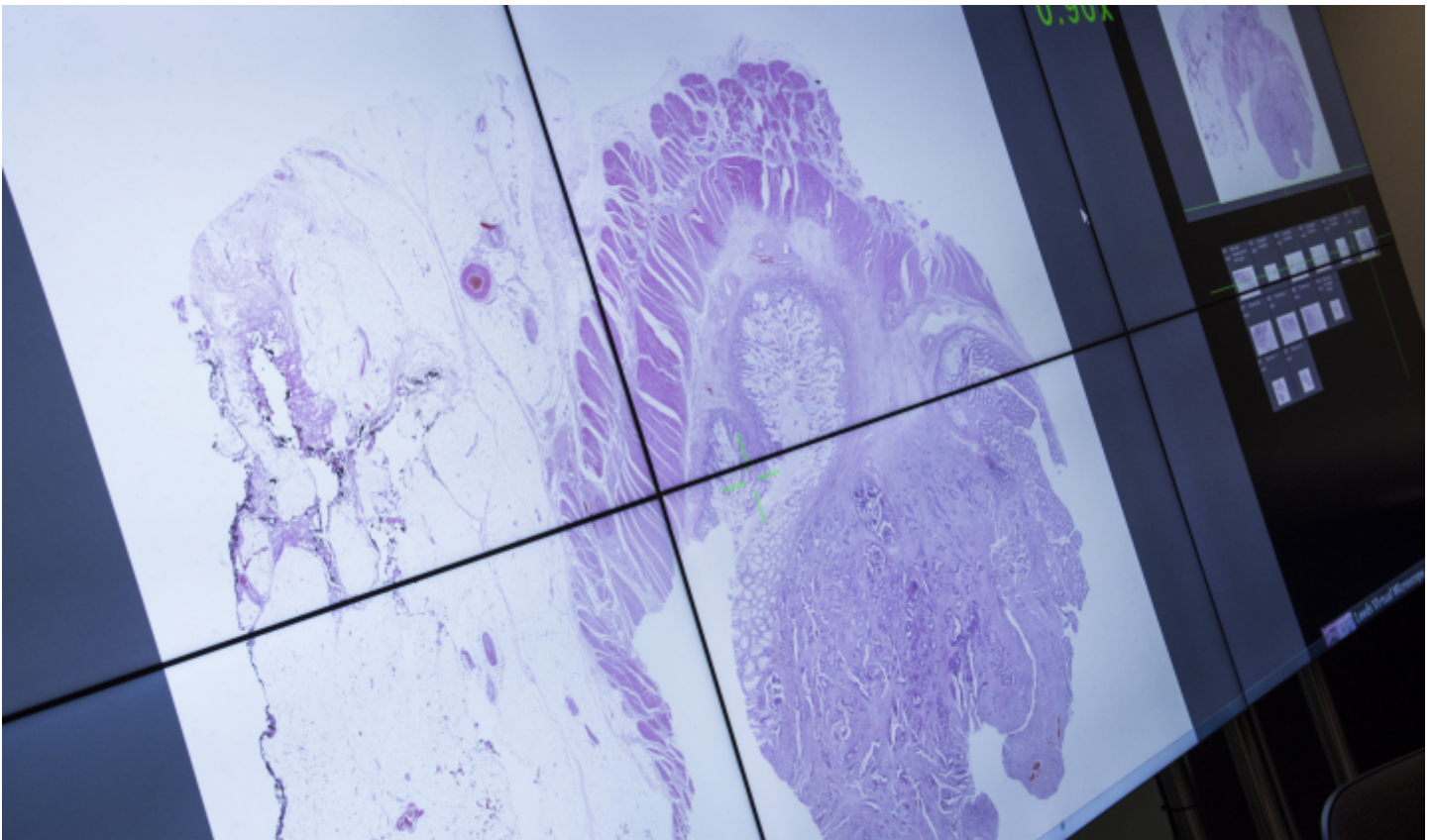


Medical microbiology and virology (doctor)

Medical microbiology and virology (MMV) involve the diagnosis, treatment and prevention of the spread of infection in hospitals and the community. Both these specialties are laboratory-based, but make a major contribution to clinical infection management.

This page provides useful information on the nature of the work, the common procedures/interventions, sub-specialties and other roles that may interest you.



Nature of the work

Medical microbiologists and virologists require clinical skills, as well as laboratory knowledge. In medical virology, the focus of skills and knowledge relate to viral infection.

Medical microbiology

Medical microbiologists provide services to aid the diagnosis and management of infectious diseases and help ensure the safety of those at risk of acquiring infectious diseases, both in hospitals and the community. Although this role is laboratory-based, the microbiologist's role is increasingly clinical.

When a patient is suspected of having an infection, they provide advice on the likely causes and suggest the best tests to diagnose it. Tests may involve the identification of parasites under the microscope, the use of biochemical tests to identify colonies of bacteria or the use of molecular tests to identify organisms (or even specific genes) which may govern an organism's behaviour.

Microbiologists provide advice regarding the interpretation of results and the appropriateness of further investigations and antibiotic treatment.

Microbiologists have a hands-on role supervising the running of the diagnostic laboratory, and ensuring the delivery of prompt and accurate test results for patients. In cases where antimicrobial drugs are required, medical microbiologists provide advice concerning the choice of such drugs and the duration of treatment.

The side effects of treatment, along the potential risk of encouraging further infections (some of which may be antibiotic-resistant) must be considered, along with any medical problems or allergies the patient might have.

Medical microbiologists also play a key role in controlling the spread of infectious diseases. Microbiologists work with hospital infection control teams to reduce the spread of infections in hospitals (including hospital 'super bugs' such as MRSA and *Clostridium Difficile*).

They also contribute to the protection of public health by monitoring the patterns of infectious diseases and reporting new or unusual occurrences of infections. In their infection control activities, microbiologists work with nurses and other healthcare professionals, hospital estates departments and management.

Teaching healthcare workers, both students and qualified staff, is an important part of the work. Research is undertaken by those with particular interests.

Medical virology

Medical virologists work in the laboratory and in clinics, as well as in hospital wards and the community. They manage HIV/AIDS and other blood-borne infections such as hepatitis B and C, as well as the challenges of the current and newly emerging viruses around the globe such as SARS and avian flu.

Medical virologists must also deal with the new threat of bioterrorism, which uses agents like smallpox. There is scope for research and teaching without compromising regular work. Virology suits people with an interest in clinical, as well as laboratory-based, activities.

Medical microbiology and virology are becoming increasingly clinical. Training is starting to converge with that of other clinical infection specialties, such as infectious diseases and genitourinary medicine. There are joint training programmes in many regions, such as combining infectious diseases with medical microbiology or virology.

"I'm passionate about my job because I believe in the importance of what I'm doing"

Read Jonathan's story [1]

Common procedures/interventions

Microbiologists and virologists don't usually work directly with patients in person, but liaise between clinical colleagues in the hospital, GPs and laboratory staff.

For more complex tests, microbiologists and virologists may undertake hands-on bench work in the laboratory.

Microbiologists use techniques that include:

- traditional culture techniques such as microbiological stains
- measuring antibody response to infection
- detection of microbial antigens
- nucleic acid amplification (polymerase chain reaction)

Virologists use techniques including:

- antigen detection techniques
- high-throughput nucleic acid extraction techniques

Laboratory staff will then provide the results of cultures of blood and sterile fluids that have become positive overnight. Urgent and important results are communicated directly to clinical colleagues through visits to the intensive care [2] unit and other relevant wards. Other significant results may be communicated to clinical colleagues via telephone.

Sub-specialties

There are no sub-specialties in medical microbiology and virology.

Want to learn more?

Find out more about:

- the working life [3] of someone in medical microbiology and virology
- the entry requirements [4] and training and development [5]

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Pay and conditions

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This section provides useful information about the pay for junior doctors (doctors in training), specialty doctors, consultants and general practitioners.

Find out more about the current pay scales for doctors [6], and there's more information on the BMA website [7].

NHS employers [8] provides useful advice and guidance on all NHS pay, contracts terms and conditions.

Medical staff working in private sector hospitals, the armed services or abroad will be paid on different scales.

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Where the role can lead

Read about consultant and non-consultant roles in medical microbiology and virology, flexible working and about wider opportunities.

Consultant roles

You can apply for consultant roles six months prior to achieving your Certificate of Completion of Training [9] (CCT [10]). You will receive your CCT [10] at the end of your microbiology and virology training.

Managerial opportunities for consultants include:

- clinical lead - lead NHS consultant for the team
- clinical director - lead NHS consultant for the department
- medical director - lead NHS consultant for the Trust

Most NHS consultants will be involved with clinical and educational supervision of junior doctors.

Here are some examples of education and training opportunities:

- director of medical education - the NHS consultant appointed to the hospital board who is responsible for the postgraduate medical training in a hospital. They work with the postgraduate dean to make sure training meets GMC standards.
- training programme director - the NHS consultant overseeing the education of the local cohort of trainee doctors eg foundation training [11] programme director. This role will be working within the LETB/deanery
- associate dean - the NHS consultant responsible for management of the entirety of a training programme. This role will be also be working within the LETB/deanery

SAS doctor roles

There are also opportunities to work at non-consultant level, for example as a SAS (Specialist and Associate Specialist) doctor.

SAS doctors (Staff, Associate Specialists and Specialty Doctors) work as career grade specialty doctors who are not in training or in consultant posts. You will need at least four postgraduate years training (two of those being in a relevant specialty) before you can apply for Specialty Doctor roles. Find out more about SAS doctors roles. [12]

Other non-training grade roles

These roles include:

- trust grade
- clinical fellows

Academic pathways

If you have trained on an academic medical microbiology and virology pathway or are interested in research there are opportunities in academic medicine.

For those with a particular interest in research, you may wish to consider an academic career in

medical microbiology and virology. Whilst not essential, some doctors start their career with an academic foundation post. Entry is highly competitive. This enables them to develop skills in research and teaching alongside the basic competences in the foundation curriculum. [13]

Entry into an academic career would usually start with an Academic Clinical Fellowship (ACF) at ST1-2 and may progress to a Clinical Lectureship (CL) at ST3 and beyond. Alternatively some trainees that begin with an ACF post then continue as an ST trainee on the clinical programme post-ST4.

After completion of the academic foundation trainees can then apply for academic core training posts (instead of normal core training). A PhD is often taken, either during core or specialty training.

Applications for entry into Academic Clinical Fellow posts are coordinated by the National Institute for Health Research Trainees Coordinating Centre (NIHRTCC). [14]

There are also numerous opportunities for trainees to undertake research outside of the ACF/CL route, as part of planned time out of their training programme. Find out more about academic medicine. [15]

The Clinical Research Network [16] [16](CRN) actively encourages all doctors to take part in clinical research.

Other opportunities

Medical microbiologists and virologists may undertake research, which includes collaborating with colleagues in the UK and overseas, writing papers and presenting work at conferences.

The opportunities for research within this speciality are particularly good. Rapid developments in both pathogens and effective pharmaceutical treatments are common, and microbiology and virology are at the forefront of medical research in this field.

There may also be opportunities to work in the private sector and overseas.

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Job market and vacancies

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This page provides useful information about the availability of jobs, how to find vacancies and sources of further information.

Job market information

At present there are 422 microbiology consultants and 179 medical registrars, 9 virology consultants and 13 medical registrars in England ([17]NHS Digital, 2016 [18]). [17]

In 2014, there were 50 applications for 14 places for medical microbiology and virology specialist training. This equates to an application ratio of 3.6:1 (2014, BMJ Careers) [19].

For information regarding Scotland, Wales and Northern Ireland please click on the links below.

NHS Scotland medical and dental workforce data [20]

NHS Wales medical and dental workforce data [21]

Department of Health, Social Services and Public Safety workforce information for Northern Ireland [22]

Where to look for vacancies

Specialist combined infection training is open to those who may want to train flexibly on a less than full-time basis [23] (LTFT). You can request and apply for this after you have been offered the job. Restrictions apply.

Registration and applications for specialist combined infection training is online via Oriel [24].

Northern Ireland has its own recruitment process. For further details please visit the Northern Ireland Medical and Dental Training Agency [25]website.

- Expand / collapse
Further information

Organisations

British Infection Association [26]

British Medical Association [27]

BMJ Careers [28]

European Society of Clinical Microbiology and Infectious Diseases [29]

General Medical Council [30]

Royal College of Pathologists [31]

Training in Infection [32]

UK Clinical Virology Network [33]

The Pathological Society of Great Britain and Ireland [34]

Real-life stories

A career in microbiology (BMJ) [35]

Other roles that may interest you

- Infectious diseases [36]
- Chemical pathology [37]
- Haematology (doctor) [38]
- Histopathology (doctor) [39]

Source URL: <https://www.healthcareers.nhs.uk/explore-roles/doctors/roles-doctors/pathology/microbiology-and-virology-doctor>

Links

[1] <https://www.healthcareers.nhs.uk/explore-roles/pathology/microbiology-and-virology-doctor/real-life-story-dr-jonathan-folb>

- [2] https://www.healthcareers.nhs.uk/glossary#Intensive_care
- [3] <https://www.healthcareers.nhs.uk/explore-roles/pathology/microbiology-and-virology-doctor/working-life>
- [4] <https://www.healthcareers.nhs.uk/explore-roles/pathology/microbiology-and-virology-doctor/entry-requirements-skills-and-interests>
- [5] <https://www.healthcareers.nhs.uk/explore-roles/pathology/microbiology-and-virology-doctor/training-and-development>
- [6] <https://www.healthcareers.nhs.uk/about-us/careers-medicine/pay-doctors>
- [7] <http://bma.org.uk/practical-support-at-work/pay-fees-allowances/pay-scales>
- [8] <http://www.nhsemployers.org/your-workforce/pay-and-reward>
- [9] https://www.healthcareers.nhs.uk/glossary#Certificate_of_completion_of_training
- [10] <https://www.healthcareers.nhs.uk/glossary#CCT>
- [11] https://www.healthcareers.nhs.uk/glossary#Foundation_training
- [12] <https://www.healthcareers.nhs.uk/i-am/currently-working-health/information-doctors/sas-doctors>
- [13] <http://www.foundationprogramme.nhs.uk/pages/academic-programmes>
- [14] <https://www.nihr.ac.uk/about-us/how-we-are-managed/managing-centres/about-the-trainees-coordinating-centre.htm>
- [15] <https://www.healthcareers.nhs.uk/i-am/currently-working-health/clinical-academic-careers>
- [16] <http://www.crn.nihr.ac.uk/>
- [17] [http://www.hscic.gov.uk/searchcatalogue?productid=19760&topics=1%2fWorkforce%2fStaff+numbers&topics=2%2fWorkforce%2fStaff+numbers&topics=2%2fWorkforce%2fStaff+numbers](http://www.hscic.gov.uk/searchcatalogue?productid=19760&topics=1%2fWorkforce%2fStaff+numbers&topics=2%2fWorkforce%2fStaff+numbers%2fStaff+numbers)
- [18] <http://content.digital.nhs.uk/searchcatalogue?productid=23451&topics=2%2fWorkforce%2fStaff+numbers%2fStaff+numbers>
- [19] http://careers.bmj.com/careers/advice/Specialty_training_applications_for_2015%3A_competition_ratios_and_changes
- [20] <http://www.isdscotland.org/Health-Topics/Workforce/Medical-and-Dental/>
- [21] <https://statswales.wales.gov.uk/Catalogue/Health-and-Social-Care/NHS-Staff/Medical-and-Dental-Staff>
- [22] <https://www.health-ni.gov.uk/articles/staff-numbers>
- [23] <https://www.healthcareers.nhs.uk/i-am/currently-working-health/information-doctors/less-full-time-training-doctors>
- [24] <https://www.oriel.nhs.uk/Web/>
- [25] <http://www.nimda.gov.uk/>
- [26] <http://www.britishinfection.org>
- [27] <http://www.bma.org.uk>
- [28] <http://careers.bmj.com/>
- [29] <https://www.escmid.org/>
- [30] <http://www.gmc-uk.org/>
- [31] <http://www.rcpath.org>
- [32] <http://www.traininginfection.org.uk>
- [33] <http://www.clinicalvirology.org>
- [34] <https://www.pathsoc.org/>
- [35] <http://careers.bmj.com/careers/advice/view-article.html?id=20000664>
- [36] <https://www.healthcareers.nhs.uk/explore-roles/doctors/roles-doctors/medicine/infectious-diseases>
- [37] <https://www.healthcareers.nhs.uk/explore-roles/doctors/roles-doctors/pathology/chemical-pathology>
- [38] <https://www.healthcareers.nhs.uk/explore-roles/doctors/roles-doctors/pathology/haematology-doctor>
- [39] <https://www.healthcareers.nhs.uk/explore-roles/doctors/roles-doctors/pathology/histopathology-doctor>