The Royal College of Pathologists
Pathology: the science behind the cure

What is pathology?

Is it the work you see in television programmes like *Silent Witness* and *CSI*? Well, you're not alone if you think this. A recent survey found that two thirds of people believe that pathologists only cut up dead people and less than a third were aware that pathologists diagnose diseases in the living.

Pathology is the branch of medicine involved in the study and cure of disease. Recognising the patterns that disease takes allows pathologists to look at samples of tissue, blood or other fluids and work out what's wrong. Building on this understanding allows doctors to decide on how best to treat patients and how to prevent similar problems in future.

The science of pathology is at the heart of every branch of medicine. The doctors you meet in the surgery or hospital all depend on the knowledge, diagnostic skills and advice of some of the 4000 pathologists and 20,000 pathology scientists working in the UK. Whether it's a GP taking a cervical smear or a surgeon wanting to know the nature of a lump removed during an operation, the answer is provided by a pathologist.

Because a lot of pathology work is done behind the scenes, many people are unaware of its vital contribution to modern medicine. In fact, 70% of all diagnoses made in the NHS involve pathology. Increasingly pathologists are responsible for the direct care of patients, for example those with anaemia, leukaemia, immune and metabolic disorders like diabetes or high cholesterol. Without the detective work of pathologists investigating disease, there would be no firm answers and improving or even maintaining the quality of medical care would be impossible.

There are five main pathology specialties, and nine smaller specialties.

Histopathology
Histopathology is the study of disease in human tissue. A histopathologist looks at tissues and cells removed from patients in the clinic or during an operation and uses a trained eye to discover if a disease is present and what course of action needs to be taken. The tissue is examined first with the naked eye to look for any visible abnormalities and to select pieces to examine in more detail. These small pieces are treated so that very thin slices can be cut. The slices are then looked at under a microscope and the histopathologist tells the patient's doctor what is wrong and often provides information about the correct treatment. Histopathologists are the people who diagnose cancers and other serious illnesses but they also often have good news, discovering that a lump or mole is completely benign and is nothing to worry about. Some histopathologists also carry out post mortem examinations to find out why someone has died.

Medical Microbiology
Medical Microbiology used to be a mainly lab-based specialty but now microbiologists are out on the wards seeing patients and advising on the

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treatment and investigation of all types of infection. Medical microbiologists also give advice about many infection control issues, trying to make sure that infections do not spread from one patient to another. Microbiologists advise on the correct treatment of infections, making sure that antibiotics are not prescribed inappropriately.

Haematology

Haematology is the study and treatment of diseases of the blood cells and bone marrow such as anaemia, leukaemia and lymphoma. Haematologists also diagnose and treat blood clotting abnormalities and are responsible for ensuring that blood transfusions are safe.

Clinical Biochemistry

Clinical biochemistry is the pathology specialty that involves studying the chemical content of the blood and other body fluids. Many of those working in clinical biochemistry are highly trained scientists.

Immunology

Immunology is the study, investigation and treatment of disorders of the immune system. The immune system plays an important role in common diseases such as asthma, hay fever and allergies.

Other specialties

The other pathology specialties include:
genetics - the study of DNA and inherited diseases;
neuropathology - the study of diseases of the brain;
cytology – the study of cells obtained from fluids or smears;
clinical embryology – the study of human gametes (sperm and eggs) to treat patients with infertility;
dermatopathology – the study of diseases of the skin;
forensic pathology – the study of unnatural causes of death;
toxicology – the study of drugs in body fluids;
veterinary pathology – the study of disease in animals;
virology – the study of illnesses caused by viruses.

There are opportunities to work in pathology as a doctor, scientist or laboratory assistant, or as a provider of administrative or IT support.