'Medicine is Pathology'

Pathology is the branch of medicine that is involved in understanding the causes and processes of disease. It does this by looking at changes in the tissues of the body or in blood and other body fluids. Some of these changes show the causes of the disease, while others provide critical information for the doctor in the diagnosis and treatment of illness. These changes can often be used to reflect the severity of the disease, and are used to follow the effects of treatment.

Pathology involves a team of professionals working together to deliver high quality care. Pathologists are the specialist medical practitioners in the team acting as the direct liaison between the laboratory and the referring medical practitioners (GPs or specialists).

Pathologists work very closely with medical laboratory scientists and technicians. Together this team of professionals is responsible for running laboratories and for carrying out tests on various tissues including blood, body secretions and samples of tissue taken at surgery or as a part of a medical examination. The results of these tests allow pathologists to understand what is causing an illness.

Some pathologists see patients and may be involved directly in the delivery of care.

At the present time, pathology has seven major areas of activity. These relate either to the methods used or the types of disease which they investigate. The disciplines are:

Anatomical Pathology - deals with the tissue diagnosis of disease, usually from biopsy materials taken from a patient in the operating theatre or on a ward, or from an autopsy (post mortem).Sub specialities include:

- cytology - the performing of tests on samples of body cells to detect cancer,
- histology - the preparation of samples of body tissue for tests to diagnose and detect disease,
- forensic pathology - the analysis of criminal cases and assisting the police in their investigations.

Example test: PAP smear for cervical cancer.

Chemical Pathology or Biochemistry - deals with the entire spectrum of illness, often involving detecting changes in a wide range of substances in blood and body fluids (electrolytes, enzymes and proteins) that change in many diseases. In addition, it involves detecting and measuring tumour (cancer) markers, hormones, vitamins, poisons and both therapeutic and illicit drugs.

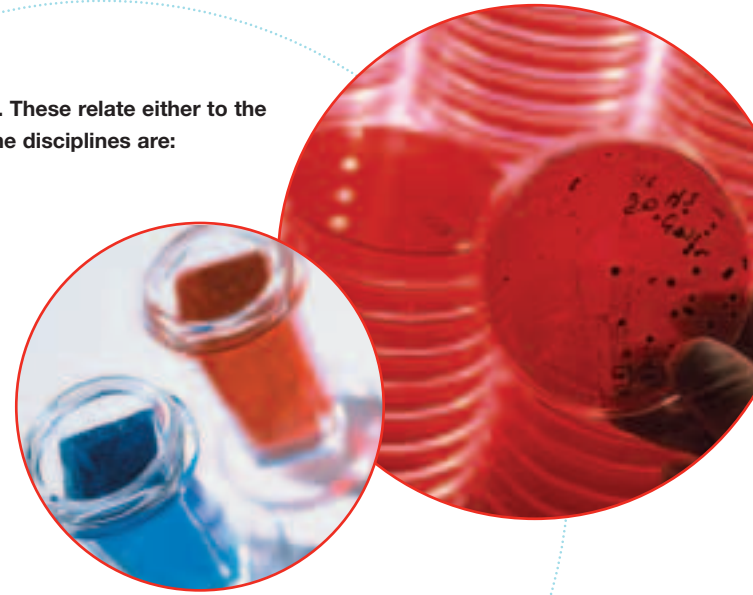
Example test: cholesterol and triglycerides to diagnose risk factors for heart disease.

Genetics - includes two main branches -cytogenetics (microscopic analysis of chromosomal abnormalities) and molecular genetics (uses DNA technology to analyse mutations in genes). It involves tests on chromosomes and DNA from cells in body fluids and tissues to diagnose genetic diseases.

Example test: Cystic fibrosis gene test.

Haematology - deals with many aspects of diseases which affect the blood, such as anaemia, leukaemia, lymphoma and clotting or bleeding disorders. It also encompasses the subspecialty of transfusion medicine, which includes blood typing and compatibility testing and the management and supply of a large range of blood products.

Example test: INR (clotting test) to check warfarin dosage is correct.



Immunology - Immune function tests can determine whether an individual is allergic, and if so, to what. Many diseases result from the immune system defense systems inappropriately targeting normal organs systems resulting in “auto-immune diseases”. For this reason, many other immunological tests constitute diagnostic markers for disorders such as lupus, rheumatoid arthritis, diabetes and thyroid conditions. Other immunological tests monitor tissue injury due to inflammation.

Example test: SLE (lupus).

Microbiology - deals with diseases caused by infectious agents such as bacteria, viruses, fungi and parasites through tests on blood, body fluids and tissue samples.

Additional areas involve control of outbreaks of infectious disease and dealing with the problems of infections caused by antibiotic-resistant bacteria.

Example test: urine sample to detect urinary tract infection.

General Pathology - covers all areas of pathology at less specialised levels.

Example test: Pathology laboratories have general pathologists managing tests from more than one discipline, including: chemical and anatomical pathology, haematology and microbiology.

Pathology

Throughout Your Life

Involvement with pathology occurs throughout a person's life, from pre-conception and prenatal tests through to post mortem (post death).

This timeline illustrates just some of the ways pathology may affect you and your loved ones throughout your lives:

Preconception:	Mother may be tested for rubella status. Genetic testing such as cystic fibrosis
Antenatal:	Fetus may be tested for Chromosomal abnormalities Mother may be tested for iron levels (anaemia), glucose testing (gestational diabetes).
Childhood:	Children receive immunisations to prevent a range of diseases including polio, measles, mumps and rubella.
Teenage years:	Investigation of obesity
Early adult:	Diabetes, travel vaccinations Genetic testing such as Tay-Sachs disease screening, etc.
Adult:	Cholesterol, diabetes, heart conditions, thyroid conditions, liver disease, arthritis
Women:	Pap smears
Men:	PSA test for prostate cancer
Death:	Autopsy - cause of death

Interested in learning more about Pathology?

Visit our Pathology Professionals site, which includes links to major medical and scientific associations involved in pathology:

www.pathology.med.pro

The site also includes case studies & examples of how pathology plays an important role in our health, regardless of our age - from before conception through to post mortem (after someone has died).

Interested in working in pathology?

The fascinating and rewarding careers in pathology take many years of training. To be a pathologist, you must first train to become a doctor, then undertake at least five years of specialist training in conjunction with passing professional exams. To become a medical laboratory scientist you must complete a specialised university degree.

For training as a pathologist visit the RCPA website at: **www.rcpa.edu.au**

For training as a medical laboratory scientist or in any of the science disciplines, visit **www.aims.org.au**

Pathology Professionals

Working Together For Your Health

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