Timely and accurate pathology results are critical to the functioning of our entire medical system.

Pathology informs the clinical decisions of medical practitioners across the healthcare spectrum.

Given its critical role, the risks of not adequately supporting a strong national pathology system are:
- Incorrect diagnoses;
- Inappropriate requesting and testing;
- Delayed diagnoses and reduced patient throughput;
- Patients receiving incorrect treatment;
- Avoidable patient morbidity and mortality.

These issues may impact upon the physical, emotional and financial well-being of individual patients, their families and the community at large.

Pathology disciplines

70% of all diagnoses are made using a pathology test. All chronic conditions require monitoring via pathology testing. Pathologists work across a range of different specialities in addition to chemical pathology. These include:

- **Anatomical pathology**, which looks at tissue analysis of disease;
- **Forensic pathology**, which seeks to investigate and define the cause of unexpected death;
- **Genetics**, which looks at chromosomes and DNA from cells to diagnose genetic diseases;
- **Haematology**, which deals with diseases that affect the blood such as anaemia, leukaemia, lymphoma, clotting or bleeding disorders as well as management of blood transfusions;
- **Immunopathology**, which deals with the diagnosis and management of conditions in which the immune system does not function properly;
- **Microbiology**, which deals with diseases caused by infectious agents such as bacteria, viruses, fungi and parasites; and
- **General pathology**, which covers the profession as a whole.

For brochures and videos about each discipline, go to the RCPA website at [www.rcpa.edu.au](http://www.rcpa.edu.au).

“Studies have clearly demonstrated that in situations where chemical pathologists have been involved in providing advice and support, it has been beneficial to the doctor’s ability to treat patients.”

Dr Graham Jones
Chemical pathologists are responsible for dealing with the entire range of disease. Their work encompasses detecting changes in a number of substances in blood and body fluids (such as salts, fats, sugars and proteins), detecting and measuring cancer markers, hormones, poisons and both therapeutic and illicit drugs.

Over one million clinical chemical pathology tests per million Australians are performed annually.

“Are their kidneys getting sick in response to a drug? Is their cholesterol going down with the appropriate treatment? Have they got enough oxygen in their blood after they’ve had their heart transplant? All of those tests are part of the chemical pathology repertoire.”

Dr Graham Jones

Interpretation of results

While chemical pathology may appear largely automated, pathologists and scientists are very actively involved in the interpretation of the results, performing roles and providing insights that machines cannot.

Pathology laboratories use computer systems which allow the pathologists to filter results on whether they contain critical information based on complex algorithms the pathologists review regularly. Results that are clearly normal are automatically sent to the referring doctor.

Abnormal results are initially reviewed by laboratory scientists, with more difficult cases going through to the chemical pathologist for interpretation.

Interpretation of abnormal results and the resultant diagnoses are based on a range of factors, including the patient’s age, condition and symptoms. Interpreting the results requires the pathologist’s medical expertise. A result that might be simple to interpret in one person might be very difficult in another person who’s receiving multiple medications or who has other medical conditions.

Overseeing the Laboratory

Chemical pathologists are responsible for overseeing the functioning of their laboratory to make sure that the conditions enable tests to be done accurately, interpreted properly, reported correctly and communicated to requesting doctors effectively.

The selection of the appropriate test method, the setting of reference intervals and the method of reporting can affect many thousands of patients, so the pathologist takes great care with these decisions.

Chemical Pathologists help other doctors help patients

Chemical pathologists work at the interface of the laboratory, between the measurement side and the clinical practice.

“Doctors have a focus through to the patient. When they phone us, they want to speak to a person who can synthesise information and tell them things they don’t know.”

Dr Graham Jones

Advice

Chemical pathologists regularly advise other medical specialists on testing and treatment options for patients, and are increasingly involved in the development of testing guidelines.

For example, for cases of treatment involving cholesterol lowering drugs, pathologists can guide general practitioners and cardiologists about the most appropriate use of expensive statin drugs.