



The Royal College of Pathologists

Pathology: the science behind the cure

Object 33: Astrup blood gas analyser



What is it?

Blood gas analysis involves the measurement of the partial pressure of oxygen (pO_2) and carbon dioxide (pCO_2) in a sample of arterial blood. The introduction of rapid, accurate blood gas analysis has revolutionised the treatment of patients with a wide range of serious cardiopulmonary and neurological conditions. The first automated blood gas analyser was developed by Danish scientist Poul Astrup.

History

Astrup developed his analyser in Copenhagen in the 1950s during a devastating polio epidemic in which many ventilated patients died. Before his invention, measurement of pO_2 and pCO_2 in the blood depended on time-consuming vacuum extraction techniques. Astrup developed a primitive device to measure the pCO_2 , which was quick and accurate, reducing the death rate from 90% at the beginning of the epidemic, to 25% by the end.

Pathology

The ability to measure blood gases quickly and reliably has highlighted the vital role that clinical biochemistry plays in the diagnosis and treatment of serious conditions. Modern blood gas analysers are smaller, cheaper and more complex than the early models and many are self-calibrating, making them easier to use with minimal training. Testing can even be done at the patient's bedside in a few seconds.

Find out more

You can see modern blood gas analysers in action in any pathology laboratory in the country – why not see if there's a [lab open day near you?](#)

To learn more about the history of acid base balance visit the [Acid-Base Tutorial](#).