

THE ROLE OF CLINICAL PATHOLOGY

There are many misconceptions about the role of clinical pathology. Some clinicians undervalue clinical pathology data, using it only to attempt to confirm something which clinical acumen has already discovered. Equally, there is a tendency to place too much emphasis on clinical pathology data, regarding it as a definitive diagnostic tool to be relied upon when acumen has failed entirely. Clinical pathology data can indeed be definitive but this approach leads to disappointment when the data is equivocal, or worse, completely uninformative. In short, clinical pathology data is integral to nearly all diagnostic investigations. Searching a profile for evidence of a disease pattern is as important a part of the database for each patient as the physical examination and history. Profiles are designed to evaluate the status and function of the internal organs and the blood. There are some body systems, for example, the central nervous system, the cardio-respiratory system and the gastrointestinal tract, for which there are few relevant biochemical and haematological parameters. Other body systems are well represented in correctly designed profiles. Beware of using a limited profile e.g. a kidney profile, as the primary database for a new investigation; the missing information may return to haunt you at a later date!

Pattern recognition is the foundation of the clinical pathologist's art and forms the basis for the interpretation of data, blood films and cytology. Pattern recognition also helps to overcome some of the eccentricities of reference ranges and sampling artefacts. Remember that reference ranges are never more than guidelines, since variables such as the definition of a normal animal, differing methods of analysis, and the huge diversity of veterinary species under investigation render many ranges absolutely meaningless unless interpreted in the context of a pattern of clinical signs, history and data.

Some diseases produce consistent patterns which can be interpreted with relative ease but mixed patterns featuring more than one primary pathological process and diverse secondary effects, frequently occur. Certain types of sample artefacts e.g. sample ageing, may complicate pattern interpretation. Many of these ageing artefacts leave recognisable footprints which are specific to the laboratory and the methods of analysis being used.

One of the most challenging aspects of diagnostic interpretation is the fourth dimension "*time*". Disease processes develop over time and each sample is effectively a single frame from a moving picture. Incomplete patterns abound and recognising them takes experience. Often, further samples taken at a later date provide the missing information and secure the diagnosis. This is particularly true of diseases involving the haematopoietic and endocrine systems. The time interval before re-sampling may be crucial and it is advisable to seek the advice of an experienced clinical pathologist.

The provision and interpretation of results which are precise and true are the hallmarks of a quality clinical pathology service. Quality assurance will not be discussed in detail here but it is clear that medical decisions based on results which are not subjected to rigorous quality control procedures may at best be rash, and at worst disastrous.

Complete quality assurance requires internal monitoring of controls, calibrators and standards (*precise results*) and also comparison of results with those from other laboratories using the same external samples (*true results*). When you use data from a professional Clinical Pathology Laboratory such as Axiom you know that, although human error can never be absolutely prevented, the results are constantly scrutinised by qualified technicians and clinical pathologists to ensure that values are both precise and true.