

Critical Differences

Has there been a change and if so, is it a significant one?

When two test results on a patient are compared, sources of variation have to be considered:-

- + Analytical variation
- + Extrinsic biological variation (related to time, posture, stress etc.)
- + Intrinsic biological variation (intra-individual variation)
- + Effect of pathological changes

Extrinsic biological variation should be minimised by ensuring tests are taken under the same circumstances as far as is possible.

In order to assess the relevance of any change to a pathological process, it is necessary to have an indication of the contribution of analytical and intrinsic biological variation. The probability that the difference between two results is significant (95% level) requires the difference to be 2.8 times the total (analytical and intrinsic biological) variation of the test.

This is known as the ***Critical Difference***.

Please Note

- The Critical Differences quoted are mean values; individuals may show greater or lesser intrinsic biological variation.
- Because a change in a level exceeds the critical difference, it does not necessarily follow that it is clinically significant.

Reference

Fraser C G. Interpretation of Clinical Laboratory Data. Oxford: Blackwell Scientific Publications, 1986.