Letter to the Editor

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The difference between reference interval and reference range

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To the Editor,

There still appears a controversial use of the two terms reference interval and reference range. R. Dybkaer (former International Federation of Clinical Chemistry and Laboratory Medicine [IFCC] president) and HE Solberg have published an approved IFCC recommendation [1] in which they state under Top 2.2:

"A widely used practice is to state the limits of an interval[7)] that depends on location and dispersion of the reference values. In clinical chemistry and haematology it is customary to calculate a closed interval comprising a central number fraction of 0.95 (or 95 per cent) of the reference values. Other number of fractions or an asymmetrical position of the reference interval may be more appropriate in particular cases.

[7)] The term 'interval' is preferred to 'range' which should be restricted to the difference between upper and lower limit of an interval (or class)."

According to this recommendation, the reference interval for sodium concentration in serum or plasma would be, e.g. 135–145 mmol/L and the reference range would be 10 mmol/L. In statistics, range may also be called span (the difference between two limits, resp. two numbers).

This approved recommendation is still valid and is widely recognized internationally [2, 3]. The limits of the reference interval may be called lower and upper reference limit and are often given with 90% confidence limits.

Translation into other languages may sometimes be problematic. For instance, both the terms "interval" and "range" can be translated to "Bereich" in the German language. For didactical reasons and in analogy to the aforementioned international usage, we recommend for German-speaking countries, the usage of "ReferenzIntervall" for reference interval. The lower and upper reference limit (abbreviated lRL and uRL) can be translated to "untere" and "obere Referenzgrenze" (uRG and oRG). The term normal range ("Normalbereich") should not be used anymore because normality is difficult to be defined in medicine [4, 5].

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