

## Varia

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**International Committee for Standardization in Hematology (ICSH)  
International Federation of Clinical Chemistry (IFCC)  
World Association of (Anatomic and Clinical) Pathology Societies (WAPS)**

*Recommendation for Use of the International System of Units  
in Clinical Laboratory Measurement*

Representatives of the International Committee for Standardization in Hematology (ICSH), the International Federation of Clinical Chemistry (IFCC), and the World Association of (Anatomic and Clinical) Pathology Societies (WAPS) met in combined session in Munich on 14th September 1972, on the occasion of the VIIIth World Congress of Anatomic and Clinical Pathology. They agreed to recommend to the medical practitioners and all others concerned with health services throughout the world the following principles with regard to units of measurement for medical laboratory results.

1. The *International System of Units* (SI) is accepted in its broad application.
2. In accordance with chemical usage the preferred unit of volume is *litre*, symbolized: l.
3. For multiples and submultiples of units, including derived units, only one prefix should be used. For preference this should be confined to the numerator; exception is made in the case of the kilogram. Thus, units of concentration should use the litre as the denominator.<sup>1</sup>
4. For quantities concerning a component with sufficiently well known chemical structure, molecular kinds of quantities based on *amount of substance* (using the unit *mole*) are recommended.<sup>1</sup>
5. In principle, a report of a determined quantity should always include information on (1) system, (2) component, (3) kind of quantity, (4) numerical value, and (5) unit. Thus, as an example, plasma iron can be reported as: Plasma-Iron (II + III), substance concentration = 23  $\mu\text{mol/l}$  [abbreviated: P-Iron (II + III), substc. = 23  $\mu\text{mol/l}$ ].<sup>2</sup>
6. The three organizations named above agree to consult in the future before advising on implementation of recommendations on quantities and units. For this purpose a Liaison Committee on Quantities and Units will be established, consisting of one representative of each of the three bodies.

<sup>1</sup> Because of uncertainty concerning the elementary entity of hemoglobin to be used in calculation, ICSH recommends that for the time being hemoglobin concentration in blood should be expressed as mass concentration, either in g/l or in g/dl. It is, however, permitted to use substance concentration (e.g. in mmol/l); in this case the elementary entity (monomer or tetramer) should be specified.

<sup>2</sup> Rules of detail cannot be given for universal use. The principles should be applied according to language and circumstances.

7. Further information regarding specific recommendations can be obtained from the representative of the appropriate organization, as follows.

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IFCC: Dr. R. DYBKÆR, Department of Clinical Chemistry, Geriatric Unit, De Gamles By, Nørre Allé 41, DK-2200 Copenhagen N (Denmark)

WAPS: Dr. J. R. SCHENKEN, Nebraska Methodist Hospital, 3612 Cuming Street, Omaha, NB 68131 (USA)

Munich, September 14th, 1972

For ICSH: O. W. VAN ASSENDELFT, R. J. EILERS, A. VON KLEIN-WISENBERG, S. M. LEWIS, J. SPAANDER.

For IFCC: J. BÜTTNER, R. DYBKÆR, A. H. HOLTZ.

For WAPS: G. ASTALDI, K. G. VON BOROVICZÉNY, B. E. COPELAND, G. J. CORLEY, P. I. A. HENDRY, C. E. D. TAYLOR, F. D. WHITE.

#### References

- 1 SI, the International System of Units. National Physical Laboratory. (Her Majesty's Stationery Office, London 1970).
- 2 Recommendation 1966, in DYBKÆR and JØRGENSEN Quantities and units in clinical chemistry (Munksgaard, Copenhagen, or Williams and Wilkins, Baltimore 1967).
- 3 International Union of Pure and Applied Chemistry and International Federation of Clinical Chemistry: Quantities and units in clinical chemistry, and list of quantities in clinical chemistry. Information Bulletin 20 and 21 (IUPAC, Oxford 1972).

### **Fifth International Symposium on Clinical Enzymology**

Conegliano (Italy), October 19–21, 1973

The Symposium is open to all people interested in Clinical Enzymology. The program will include invited lectures, research communications and informal discussion.

Abstracts of the communications should be sent not later than July 31, 1973.

To celebrate our Fifth Anniversary the meetings will be held in Venice, at the 'Giorgio Cini Foundation' in the island of San Giorgio Maggiore.

For information and for sending the abstracts please apply to: Prof. A. BURLINA, M. D., Enzymopathology Center, General Hospital, I-31015 Conegliano (Italy)