

Young DS, Huth EJ. **SI Units for Clinical Measurement**. Philadelphia: American College of Physicians; 1998. 331 pages; ISBN 0-943126-51-7; price: US\$36

"There is life with SI!" state the authors of this book. And indeed this is true for the majority of the world scientists in the last 128 years. The foundations of the present international system of measurement, le Système International d'Unités (SI) were set at the meeting of the International Commission of the Metre in France in 1870. Except for the USA and a few small countries, official usage of metric units around the world follows the 1977 World Health Organization recommendations (1). However, all scientific communities, including US physicians, will have to accept SI units because of a rising use of medical information published in journals that insist on SI units and a large amount of medical data transmitted over Internet. The book on the clinical use of SI units has been written by experts in the field. Donald S. Young, MB, PhD, is the Vice Chair for Laboratory Medicine of the University of Pennsylvania and Director of William Pepper Laboratory of the Hospital of the same University. Edward J. Huth, MD, FRCP, MACP, served as the full-time editor of the *Annals of Internal Medicine* for 19 years. We warmly recommend his books on scientific publishing ("Medical Style and Format: an International Manual for Authors, Editors, and Publishers"; and "How to Write and Publish Papers in the Medical Sciences") to beginners and experts writing manuscripts for scientific journals. The first part of the book consists of five chapters integrating basic proposals and a brief history of SI, with a special reference to medical science, health professionals, and hospitals. Seven base units of the SI, for mass, length, time, amount of substance, thermodynamic temperature, electric current, and luminous intensity are described (the eighth one, kat – the measure of enzyme activity – has not yet been accepted as an official unit instead of the international unit, IU). These chapters offer valuable tables that clearly describe characteristics of the base and derived units, style rules, and prefixes and symbols for decimal multipliers (beyond usual but fun to know: yocto for 10^{-24} , zepto for 10^{-21} , zetta for 10^{21} , and yotta for 10^{24}). Style notes also explain important writing rules. For example, lowercase letters should be used in unit symbols except for the units based on proper names (kg for kilogram and cd for candela, but Bq, C, and W for becquerel, coulomb, and weber, respectively). Lowercase letters should be used for kilo and smaller prefixes and capital letters for mega and larger prefixes. They should be written together with the unit (mmol instead of m mol for millimole and Gs instead of G s for gigasecond), but spaced from a numerical value (50 kg and 37 C are correct but not 50kg and 37°C). Spacing between the three-digit groups is preferred to the use of commas (10 000 instead of 10,000) and zero place before the decimal point must be written (0.01 is correct, not .01). Combined units have to be written with a centered dot (i.e., above the writing line) instead of a space or no separator, whereas a negative exponent is preferred to a slash (kg·m⁻³ is correct but not kg m⁻³, kgm⁻³ or kg/m³). If the non-SI unit liter is used for volume instead of the SI dm³, it should be written with a capital letter L – the fact important for a number of medical journals still writing volumes in l, ml, mol/l, etc.. The fourth chapter addresses the specificities of measurements in different medical fields, such as nephrology, radiology, cardiovascular medicine, and laboratory medicine. It describes the basic rules for the use of units in these fields, conventional and older metric units and their SI substitutes, together with prefixes and conversion factors when necessary. For example, L·kPa⁻¹ instead of L·cmH₂O⁻¹ for compliance and kPa·L·s instead of mm Hg·L⁻¹·min for resistance should be used in pulmonary medicine and respiratory physiology. The fifth chapter deals with the introduction of SI units into a hospital use. It is a short but very useful chapter for the countries that have not yet switched to the SI system since it offers a stepwise system for the introduction of SI units without major side effects or breakdowns in the system.

Three appendices form a considerable part of the book (more than 250 pages). The first one, "Chemical analytes and hematological measurements: units, conversion factors, significant digits and suggested increments" offers an alphabetical list of analytes in a continuous table. A traditional measuring units, values in healthy persons in traditional units, conversion factor to SI unit, values in healthy persons with significant digits, and suggested minimal increment in SI unit are listed for each analyte. The second appendix gives an index of synonyms for analytes and cross-references to the entry terms. This is a particularly useful table from which one can learn what an abbreviation on a laboratory diagnostic slip exactly means. The third appendix offers a list of commonly used solutions in medical practice. We found this table particularly useful to all involved with a routine clinical work. Who among us can still remember the ingredients of the Ringer's solution or an oral electrolyte

rehydration solution, their mass and molar concentrations? – these solutions are usually used as commercial preparations but one should be prepared to make them from scratch (recent war in Croatia has taught us to leave no bases uncovered in this respect).

Long tables and endless alphabetical lists of chemical agents should not alarm the reader. In fact, this book was a revelation to us, both as editors of a medical journal and authors of articles in other international medical journals! Although the authors wrote the book for the physicians in the USA, who need guidance in the proper use of SI units in their practice, we recommend it also to those who have grown up in the SI world. Every author preparing manuscripts for a medical journal or book should have this book on his or her shelf. It will be of great help in many ways, particularly in those small but often neglected details, such as proper writing or abbreviation of a substance, the range expected in normal persons, the number of decimal points, suggested increments, etc. After consulting the book, the author of a scientific report could be sure that the reviewers will at least be satisfied with the neatness and correctness of the data presentation. For editors of medical journals, this book is a necessity. Whoever has tried to create some consistency in the style of data presentation in a medical journal will welcome our advice: this book offers a reliable tool for uniform and accurate (!) presentation of clinical measurements. Two hundred and one pages of data on analytes are a definite cure to all uncertainties, such as whether to write transforming growth factor beta with or without a dash (it should be transforming growth factor- β). This may seem as an obsessive indulgence in details, but journal editors and authors in medicine must be aware that clarity and precision are the most important attributes of a scientific manuscript. In our Editorial office, this book will have a special place!

Ana Marusic and Mladen Petrovecki

1. World Health Organization. The SI for the health professions. Geneva: WHO; 1977.