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PROPERTIES AND UNITS FOR TRANSFUSION MEDICINE AND IMMUNOHAEMATOLOGY (Technical report) (IFCC-IUPAC 2003)

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#The combined Membership of the IFCC Committee
during the preparation of this report (2001-2002) was as
follows:

Chairman: U. Forsum (Sweden) . Members: P. Soares de
Araujo (Brazil; 1994-) ; R. Dybkær (Denmark; 1996-) ;
A. Jabor (Czech Republic; 1998-) ; W. R. Külpmann
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Synopsis

This document is part of an ongoing effort to standardize
transmission of laboratory data across cultural and
linguistic domains, without attempting to standardize the
routine language used by clinicians and laboratory
practitioners.

It comprises a general introduction, and an alphabetic list
of properties. The list is based on the syntax for properties
recommended by the International Federation of Clinical
Chemistry and Laboratory Medicine (IFCC) and the
International Union of Pure and Applied Chemistry
(IUPAC) [1]. The nomenclature is primarily from the
Working Party on Terminology of the International Society
of Blood Transfusion (ISBT) [2-5].

General introduction

The purpose of this document is to create a systematic
terminology, that can be used as the basis for encoding
laboratory messages in the domain of transfusion medicine
and immuno-haematology. The systematic terms and
unique codes for properties recommended for scientific
communication and in requests and reports are primarily
for the purpose of unambiguous data exchange. Their use
by clinicians or laboratory practitioners is optional but
encouraged.

Syntax and definitions

syntax : System(specification) —
Component(specification) ; kind-of-
property(specification) = (x).(x) [1].

EXAMPLES: NPU21943 Neutrophilocytes (Blood) —
Immunoglobulin A; arbitrary entitic number (procedure)
= ? arbitrary unit

NPU01945 Erythrocytes(Blood) — Erythrocyte antigen; taxon(ABO; RhD; procedure) = ?

system: demarcated arrangement of a set of elements and a set of relationships between these elements [6]

EXAMPLE: a portion of blood, a portion of plasma, a portion of erythrocytes.

component: definable part of a system [6]

EXAMPLE: Erythrocyte Aantibody as part of a plasma sample.

kind of property: attribute of phenomena, bodies or substances that may be distinguished qualitatively[6]

NOTE 1 - In ENV 1614 the term property (in a general sense) is used as synonym for kind-of-property[6] .

NOTE 2 - A kind of property may be qualified by each user to nominal scale, ordinal scale, difference scale or ratio scale. The last three types of kind-of-property are also called kind-of-quantity.

compatibility : mutual tolerance

NOTE 1 - There is presently no officially approved definition. The definition for this kind-of-property is for use in this document only.

EXAMPLE: NPU21410 Plasma B-lymphocyte antibody; compatibility(donationID; absent present) = ?

nominal scale: scale with a set of possible values for a given kind-of-property that are each a word or symbol without any relation to magnitude [1]

EXAMPLE: taxon of erythrocyte antigen in a sample of blood identified as BARC; Cra.

NOTE - The values may be listed in any order according to practical considerations and convention.

ordinal scale: scale with an ordered set of possible values for a given kind-of-quantity that are each a word or symbol used for ranking according to magnitude, but where differences or ratios between values have no arithmetic meaning [1]

EXAMPLE: arbitrary number of Immunoglobulin M molecules(median) per erythrocyte in a sample of blood found as "0" or "1"; or "absent" or "present"; or "negative" or "positive".

ratio scale: scale of measurement with an ordered set of values for a given kind of measurable quantity that are each a product of numerical value and unit of measurement such that a given ratio between values corresponds to the ratio between magnitudes of the measurable quantities along the scale [1]

EXAMPLE: entitic number of immunoglobulin A molecules(median) per thrombocyte in a sample of thrombocytes.

list of related properties: some requests elicit a series of related properties that may be grouped under a common heading in a report. The heading is for requesting and the list of properties presented is for selection by the individual laboratory

EXAMPLE: NPU21970 P— HNA antibody(IgM) ; arb.c.(list; 0 1)

NPU21971 P— HNA-1a antibody(IgM) ; arb.c. = 0

NPU21972 P— HNA-1b antibody(IgM) ; arb.c. = 0

NPU21973 P— HNA-1c antibody(IgM) ; arb.c. = 0

NPU21974 P— HNA-2a antibody(IgM) ; arb.c. = 1

NPU21975 P— HNA-3a antibody(IgM) ; arb.c. = 0

NPU21976 P— HNA-4a antibody(IgM) ; arb.c. = 0

NPU21977 P— HNA-5a antibody(IgM) ; arb.c. = 0

Alternatively the request and report in these cases may be reduced to a single entry using the kind-of-property taxon and nominal results if the actual list of properties looked for in the procedure is part of the general information from the laboratory.

EXAMPLE: NPU21924 P— HNA antibody(IgM) ; taxon = HNA-2a

designation of property: set of data elements comprising information on system, component and kind-of-property and their adherent specifications.

NOTE 1 - There is presently no officially approved definition. This definition is for use in this document only.

NOTE 2 - Information about identification of system, time and result is not considered in the entries of this document.

EXAMPLE: Lymphocytes(Blood) — B-lymphocytes(immature) ; number fraction.

International Coding Scheme Identifier, ICSI: identifier assigned to uniquely identify a registered coding scheme for use in information interchange [7]

EXAMPLE: "NPU" for codes allocated by the C-NPU of the IFCC-IUPAC.

code value : result of applying a coding scheme to an element in a coded set [7]

EXAMPLE of number and term: 21406 for Blood—
Crossmatch(electronic); expiry(date and hour; procedure)”.

Systematic Request and Report of Clinical Laboratory Results

The parts comprised in the concept of ‘term of property’ and in the concept of ‘term of a result’ are presented in table 1.

By convention, properties and results of examinations are connected through an operator.

- Parts 1 and 2 are Essential for a request; that is information on patient identification, time or time interval for sampling, and information on the property requested.
- The laboratory report on a particular property comprises the three parts 1, 2 and 3.
- To each element in part 2 may be added a specification as a parenthetic suffix for clarification and to avoid ambiguity.
- Note(s) (part 4) relating to, for example, diagnosis, medication, haemolysis or hardware breakdown are not included, except when needed for the interpretation of results such as pretreatment of patient or subject.
- Thus the elements of a term for a type of property comprise: System(specification)—
Component(specification); kind-of-property(specification in the form of procedural details) .
- This is as recommended by IFCC and IUPAC [1] and by the European standard ENV 1614:1995 [6] .
- EXAMPLE: Erythrocytes(Blood)— Erythrocyte antigen; taxon(AB0; RhD; procedure) .
- The elements of a result comprise: an operator (= < ? > ? etc.), a numerical value and any unit or name, usually in symbolic form. This is as recommended by the European standard ENV 12435:1996 [8] .
- Nominal and ordinal scale values carry no unit. In difference and ratio scales the unit must never be omitted in reporting results, except for the unit 1.
- It is further recommended that the result includes or refers to a value for a measure of uncertainty [8] .
- The names of components are primarily from the Working Party of the International Society of Blood Transfusion [2, 3, 4, 5] .
- In addition to the systematic term of the property, an example is given in abbreviated format.

For details, see IUPAC–IFCC (Recommendations 1995).
Syntax and semantic rules [9] .

Elements of an Entry

The terms recommended are given in bold, that is: the systematic term for the type of property, the unit and the code value.

- 1 Name of system and parenthetic specification spelled out in full, and followed by a long dash (em dash)
- 2 Alphanumeric chemical prefixes to component name
- 3 Recommended name of component and parenthetic specification Shifted to the left for alphabetical sorting and searching, and followed by a semicolon
- 4 Kind-of-property and parenthetic specification
- 5 Unit
- 6 Molar mass (M) for conversion from other units
- 7 Presently recommended calibrator
- 8 Previous calibrator(s)
- 9 Other term(s)
- 10 Authority: Code value for the international organisation recommending the name of the component or the combined elements of an entry
- 11 Note with any further information
- 12 [NPUXXXXX] . Code value, intended for interlaboratory transmission between databases
- 13 Example in abbreviated form

The term “arbitrary” in principle cannot be related to a volume. In clinical chemistry, however, a less well defined “in-house” or a regional calibrator is often referred to and is expressed in “arbitrary unit per litre” in order to enable comparison of patient data over time and regionally. In each of these instances further information should be given in the parenthesis “procedure”

In the examples given, a question mark, “?”, has been used to represent the value of a result for properties including quantities.

EXAMPLE

- 1 Erythrocytes(Blood)—
- 2 none
- 3 Complement + Immunoglobulin;
- 4 arbitrary entitic number(procedure)
- 5 arbitrary unit
- 6 none
- 7 none
- 8 none
- 9 Other term(s) : Coombs test
- 10 none
- 11 none
- 12 NPU20001

13. Ercs(B) — Complement + Immunoglobulin;
arb.entitic num. = ? arb.unit

IUPAC International Union of Pure and Applied
Chemistry

References

--> [Full List of Terms Here](#) <--

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Index of Abbreviations

C-NPU Commission on Nomenclature, Properties and Units

IFCC International Federation of Clinical Chemistry and Laboratory Medicine

ISBT International Society of Blood Transfusion