From health professionals’ discourse to KOS: representing the facets of allergy in the Integrative Levels Classification

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Context

- Allergy is a major health issue in our society
- In France, allergy/allergology was only recognized as a specialty in its own right in 2017
- No KOS that might be used by professionals in this domain for their activities of organization, classification and search for information
- Cooperation with the Allergy Unit of the University Hospital of Montpellier to create an ontology to represent and organize allergy knowledge and support work activities of allergy professionals
- Starting with a study of information practices to investigate the context of knowledge use in the domain
From a study of information practices to allergy facets

* The study carried out in 2020-2021 in the Allergy Unit (by Trzmielewski)

* Data collecting:
  - 16 participants’ observations of 8 journal club meetings and 8 clinical meetings
  - 20 interviews with professionals, investigating their practices

* Corpus of data: reports of the observations, transcripts of the interviews

* Gathering and thematic analysis of 497 terms from the corpus of data on practices

* Outcome: 17 facets, further validated by allergy professionals
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Contextual interpretation of facets

Mechanism

Indexing of article “Clinical relevance of cross-reactivity in food allergy”
- Mechanism as perspective: “cross-allergy, food allergy, mechanism”
- Mechanism as phenomena: “food allergy, cross reactivity (mechanism)”

is meant to express various kinds of allergic reactions such as “crossed”, “IgE-mediated”, “non-IgE-mediated”

Discipline

Facet created to express the different disciplinary perspectives adopted in e.g. the allergological approach versus the pneumological approach in the treatment of asthma
Application of allergy facets in the Integrative Levels Classification (ILC3)

How may we transpose and apply the strongly contextual, bottom-up data about representation of the allergy domain (facets, concepts, terms) into a general classification with classes mostly developed in a top-down way?
Basic ILC categories to organize facets

0 perspective
1 position; time
2 situation; place
3 agent
4 opposition
5 change
6 property
7 part
8 quantity
9 quality

e.g. rh3 “by medical equipment” facet
Application of allergy facets as ILC facets

- Existing facets for ILC class *rh* “healthcare” have been considered as a starting point to organize allergy facets.

- In ILC, facets for diseases (under *rh9*- ) have to cover not only a list for types of disease – like “hypersensitivity” including allergy – but also one for treated parts, one for symptoms, one for severity, etc.

- In ILC, numerals also rule the syntactical properties of facets, including what in ontology terms are called their domain and range.
The subject “immunotherapy in children food allergy” can be expressed as:

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h96i94iplf59m “healthcare, for children, healing food allergy, treated by immunotherapy
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ILC facets of healthcare

rh “healthcare”

rh59 “treated by therapy”

rh94 “healing condition”

  rh942 “with concurrent condition”

  rh943 “caused by organic pathogen”

  rh946 “showing symptom”

    rh947 “complicated by complication”

rh96 “for patient”

rh97 “of treated part”

rh98 “severity”
ILC facets

- Facets of diseases belong to the lower level \( m \) “organisms”

- Some facets of \( rh \) “healthcare” have their range in \( m4 \) “diseases”
  (parallel facets, extra-defined foci)

- Healthcare is one of the domains with the most complex facets system
  (together with music)
Lesson learned and further investigations

- The special facets of a medical domain can be applied and represented in a general faceted classification. Contextual data about the actual knowledge use in a domain are useful for this task.

- The bottom-up approach may be used to develop a general faceted classification.

- Allergy concepts may show the need for additional special facets to be represented as specifications of existing healthcare facets by additional numerals.

- The representation of allergy knowledge will soon be completed by further terms coming from different kinds of textual documents used by allergy professionals: titles and abstracts of scientific articles, messages from a general-public health forum, and clinical documents redacted in the Allergy Unit.

- Comparison with the classes for allergies in the International Classification of Diseases or the ontologies available in the BioPortal may also be useful.
References


