



Orphanet Nomenclature & Codification of Rare Diseases

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Presentation Outline

- ❑ Orphanet nomenclature
- ❑ Orphanet nomenclature update
- ❑ Coding rare disease patients
- ❑ Sites and tools

Orphanet's missions



Improve the **visibility** of RD by providing **a common language** across healthcare and research systems (ORPHAcodes)



Provide **high-quality information** and **expertise** on RD



Contribute to **generating knowledge**

→ piecing together the parts of the puzzle for better understanding of RD



The Orphanet nomenclature

- **The only nomenclature specific to RD**
- Each disease is assigned a **unique** and **stable** ORPHAcode

ORPHAcode	Preferred term	Synonyms
ORPHA:73229	HANAC syndrome	Autosomal dominant familial hematuria-retinal arteriolar tortuosity-contractions syndrome Hereditary angiopathy-nephropathy-aneurysms-muscle cramps syndrome

Definition: A rare multisystemic disease characterized by small-vessel brain disease, cerebral aneurysm, and extracerebral findings involving the kidney, muscle, and small vessels of the eye.

 English,
 Czech,
 Dutch,
 French,
 German,
 Italian,
 Polish,
 Portuguese
 Spanish.

Cross-referencing with other databases

Rett syndrome

ORPHA:778

Classification level: Disorder

Synonym(s): -

Prevalence: 1-9 / 100 000

Inheritance: X-linked dominant

Age of onset: Infancy

ICD-10: **F84.2**

OMIM: [312750](#)

UMLS: C0035372

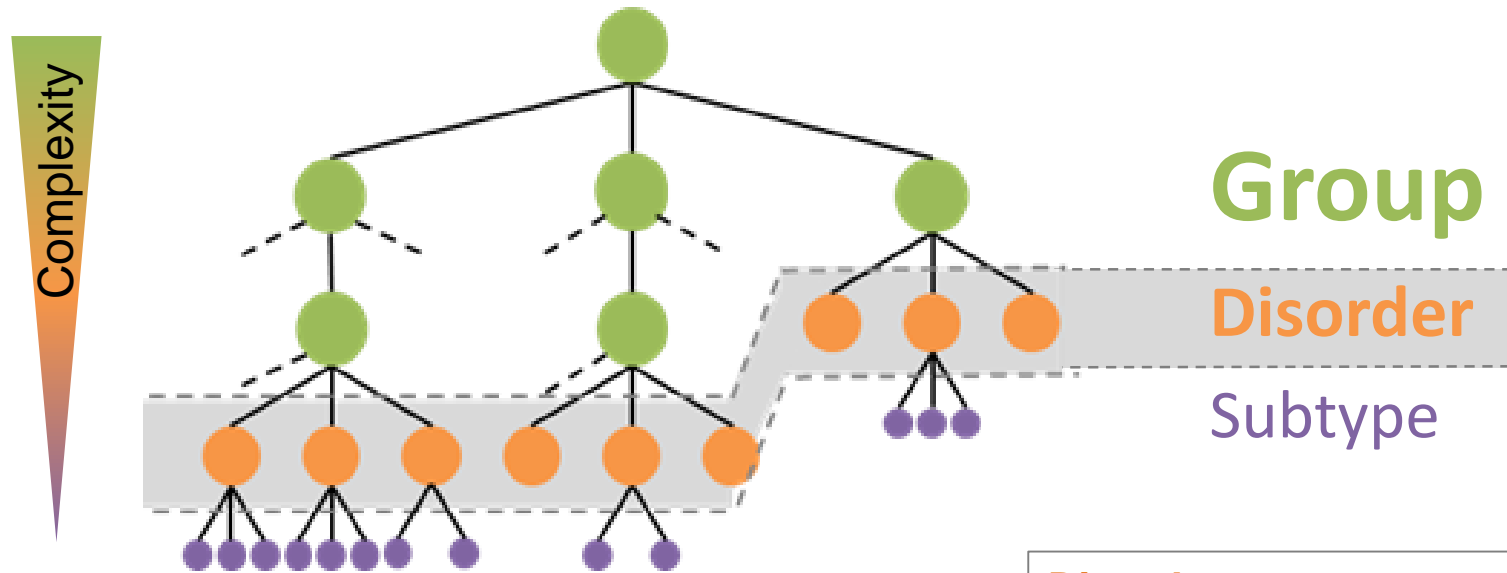
MeSH: D015518

GARD: [5696](#)

MedDRA: 10039000

Ongoing collaborations:
SNOMED-CT
ICD-11 revision

Logical structure



9318 Clinical entities:

- 2175 Groups
- 6162 Disorders
- 981 Subtypes

Disorders are **clinical entities** defined by a set of phenotypic abnormalities with a homogeneous evolution and allowing a definitive clinical diagnosis.



Includes ALL rare diseases

Presentation Outline

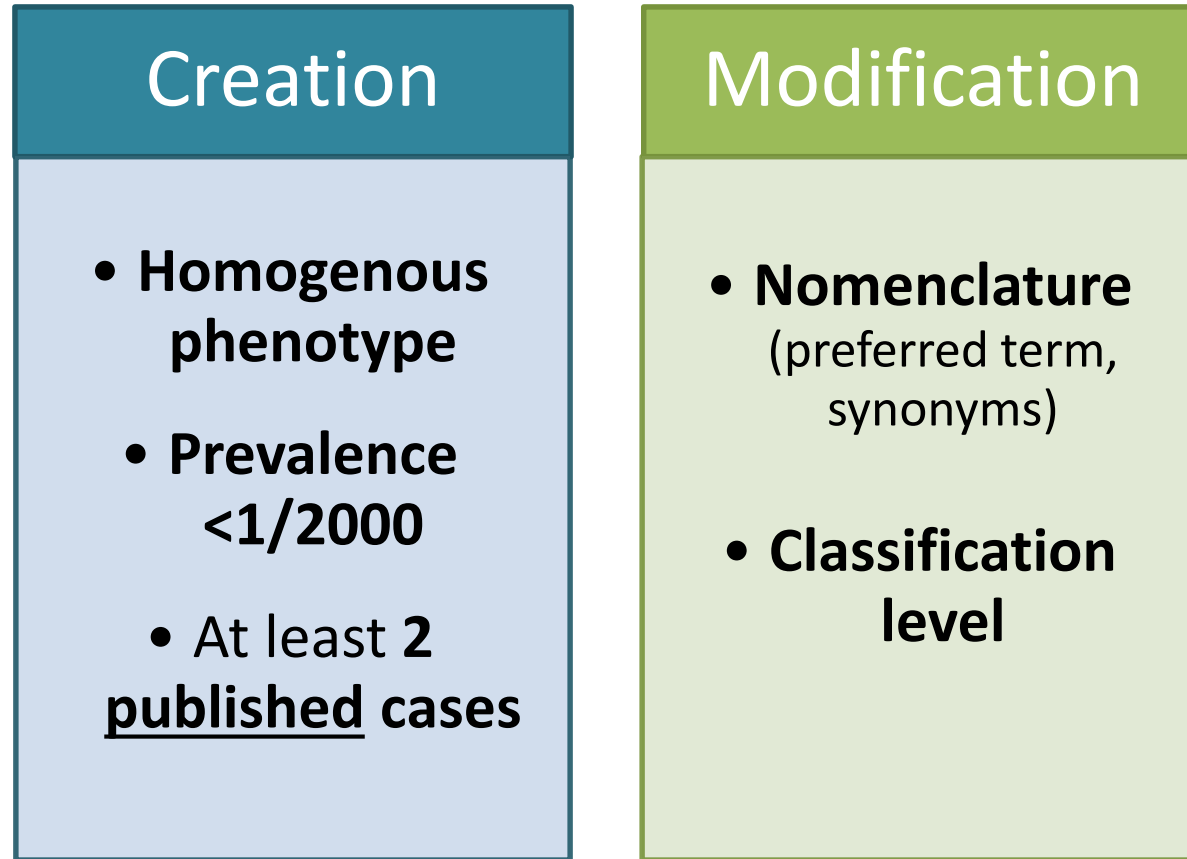
- ☐ Orphanet nomenclature
- ☒ **Orphanet nomenclature update**
- ☐ Coding rare disease patients
- ☐ Sites and tools

How is the Orphanet nomenclature updated?

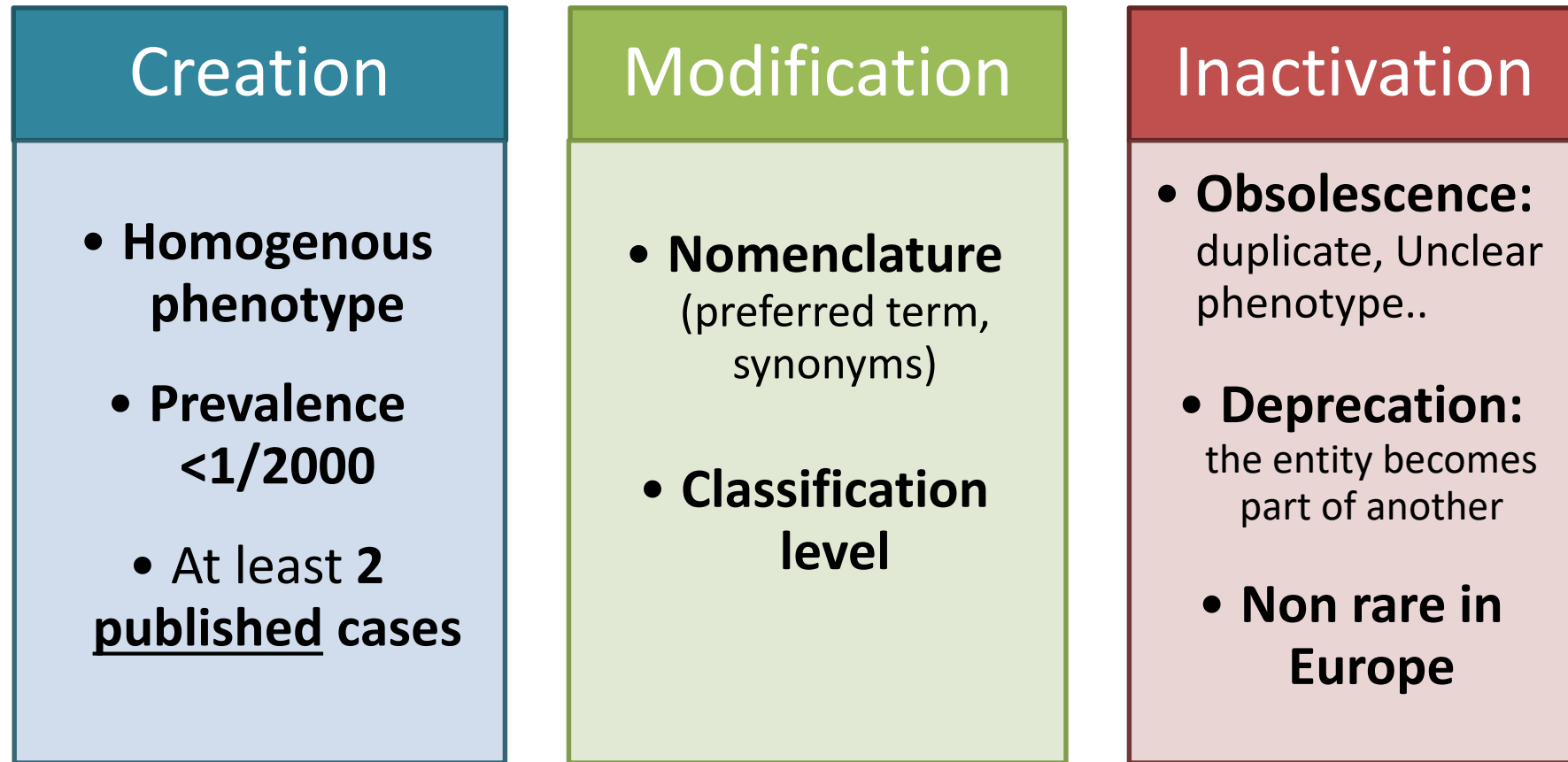
Creation

- Homogenous phenotype
- Prevalence <1/2000
- At least 2 published cases

How is the Orphanet nomenclature updated?



How is the Orphanet nomenclature updated?

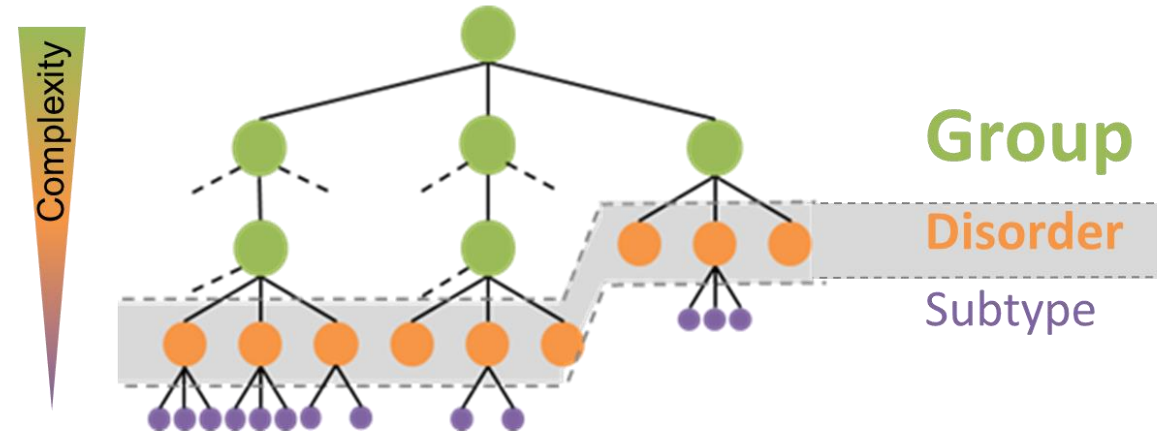


Presentation Outline

- ☐ Orphanet nomenclature
- ☐ Orphanet nomenclature update
- ☒ **Coding rare disease patients**
- ☐ Sites and tools

Coding objectives

- ✓ **Statistical analyses:** Monitor and report rare diseases patients
- ✓ **Data sharing:** Establish a common language to easily share information



Disorder level: is the most suitable level for coding

Aggregation Level
(Formerly Master File)

Coding Tools

Pack nomenclature - Xml

This pack contains:

- a **"Nomenclature"** file
- an "ICD-10" file
- a directory containing all the files of the classifications

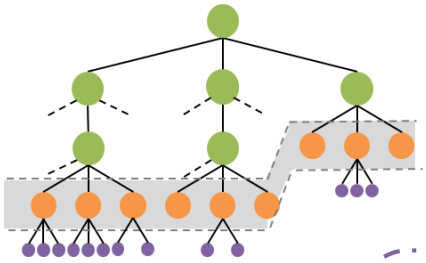
Dataset for each entity:

- ORPHAcodes;
- Preferred term;
- Orphanet URL;
- Synonym(s);
- Status: active, Inactive (Obsolete, deprecated, non rare);
- Classification level(Group, disorder or subtype);
- Disorder-disorder association (target disease of inactive entity when it exists);
- Definition ;
- Aggregation level (ORPHAcodes aggregation, preferred term and status)

```
<Disorder id="3297">
  <OrphaNumber>6</OrphaNumber>
  <ExpertLink lang="en">http://www.orpha.net/consor/cgi-bin/OC_Exp.php?lng=en&Expert=6</ExpertLink>
  <Name lang="en">3-methylcrotonyl-CoA carboxylase deficiency</Name>
  <FlagValue>1</FlagValue>
  <Totalstatus lang="en">Active</Totalstatus>
  <SynonymList count="3">
    <Synonym lang="en">3-methylcrotonylglycinuria</Synonym>
    <Synonym lang="en">MCC deficiency</Synonym>
    <Synonym lang="en">MCCD</Synonym>
  </SynonymList>
  <GroupOfType id="36547">
    <Name lang="en">Disorder</Name>
  </GroupOfType>
  <DisorderType id="21394">
    <Name lang="en">Disease</Name>
  </DisorderType>
  <DisorderDisorderAssociationList count="0">
    </DisorderDisorderAssociationList>
  <TextualInformationList count="1">
    <TextualInformation id="11826" lang="en">
      <TextSectionList count="1">
        <TextSection id="93642" lang="en">
          <TextSectionType id="16907">
            <Name lang="en">Disease definition</Name>
          </TextSectionType>
          <Contents>3-methylcrotonyl-CoA carboxylase deficiency (3-MCCD) is an inherited disorder of leu
        </TextSection>
      </TextSectionList>
    </TextualInformation>
  </TextualInformationList>
  <AggregationLevelSection>
    <AggregationLevelList count="1">
      <AggregationLevel>
        <OrphanumberAggregation>6</OrphanumberAggregation>
        <PreferredTerm lang="en">3-methylcrotonyl-CoA carboxylase deficiency</PreferredTerm>
        <AggregationLevelStatus>Applicable</AggregationLevelStatus>
      </AggregationLevel>
    </AggregationLevelList>
  </AggregationLevelSection>
</Disorder>
```




How to codes patients of rare disease?





Diagnosis

Aggregation

Results pattern


Niemann-Pick C
with perinatal onset

 
NP C NP C
perinatal onset

Only one
connection

Rare inborn errors of metabolism

Lipid storage disease

Lysosomal acid lipase deficiency

Niemann-Pick disease type C

Cholesteryl ester
storage disease

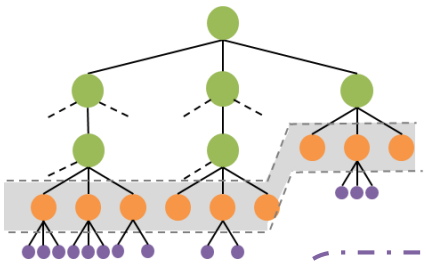
Wolman disease

NP C adult
neurologic onset

NP C juvenile
neurologic onset

NP C perinatal
onset

How to codes patients of rare disease?



Diagnosis

Aggregation

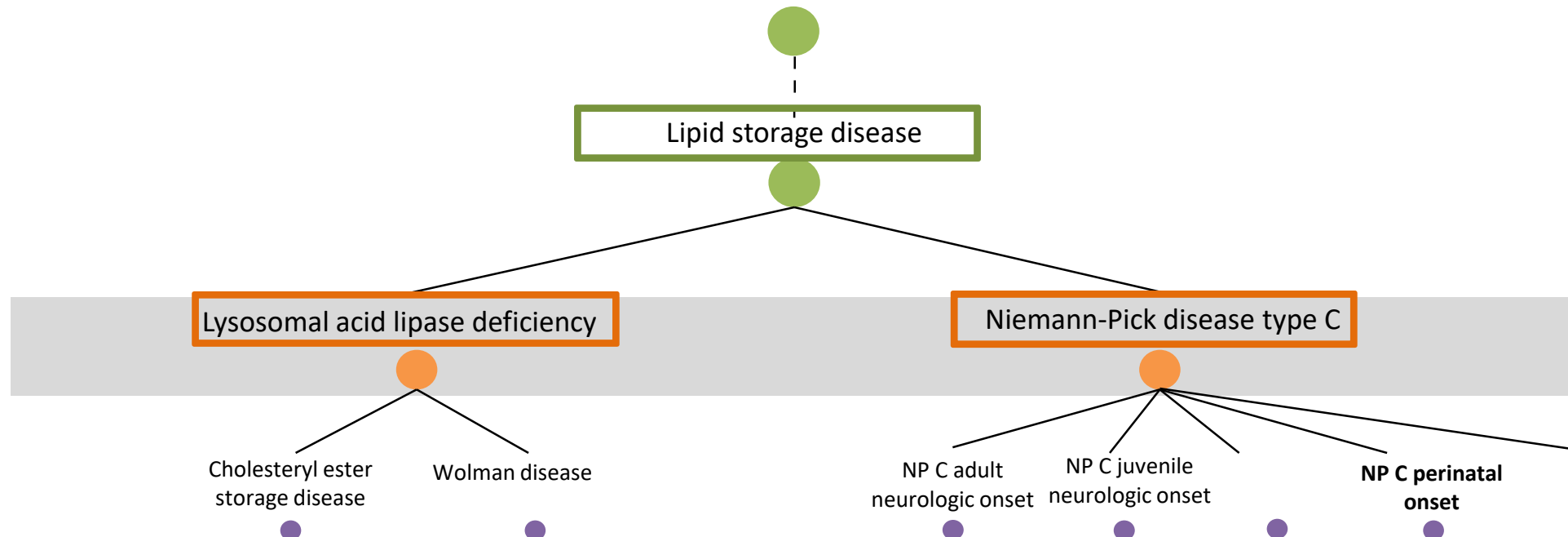
Results pattern

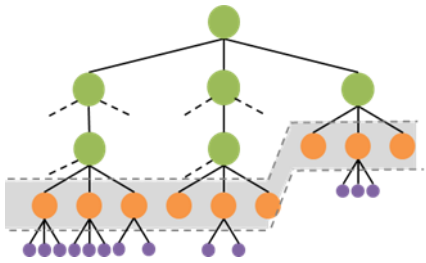

Lipid storage disease

 —  
LP D NP C
LAL deficiency

NOT APPLICABLE
Several
connections

Rare inborn errors of metabolism





How to codes patients of rare disease?

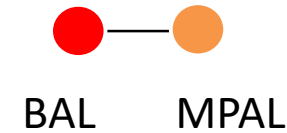
Diagnosis

Aggregation

Results pattern



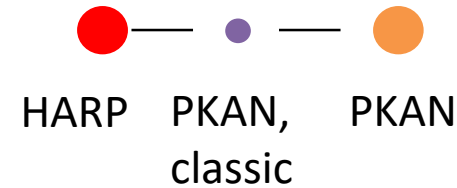
Mixed phenotype acute leukemia



Only one connection



Classic pantothenate kinase-associated neurodegeneration



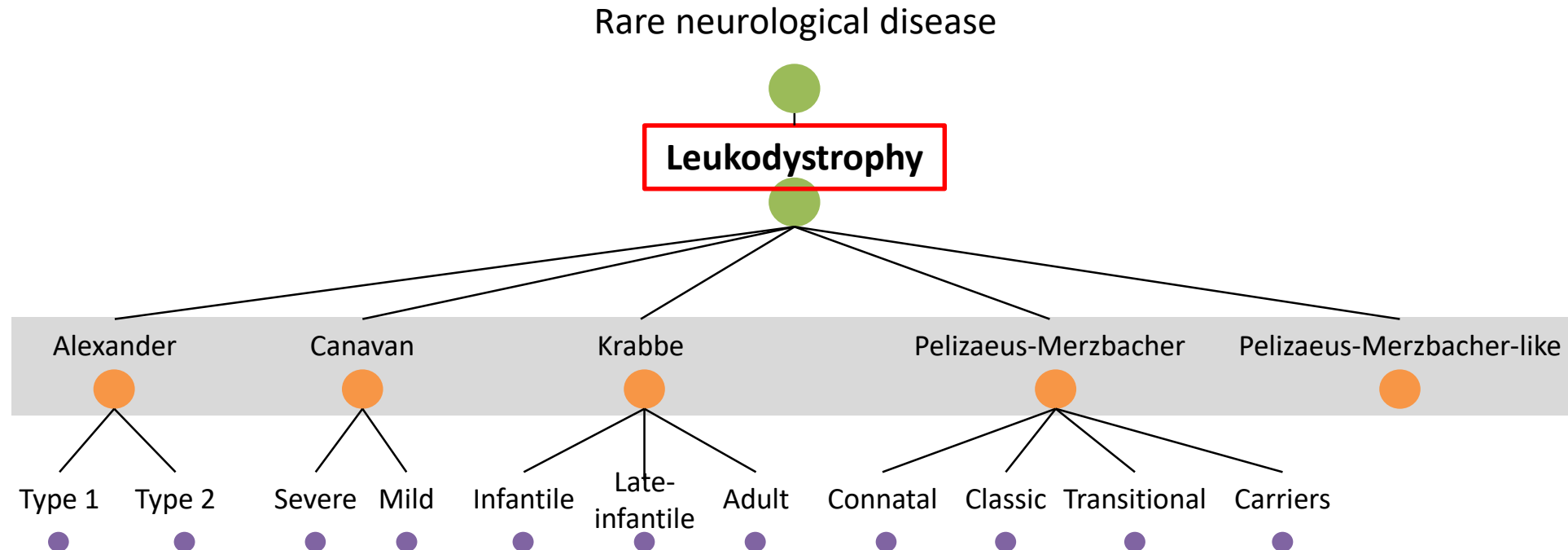
Only one connection

Importance of Orphanet classification in codification

Importance of Orphanet classification in codification

Classification using case 1

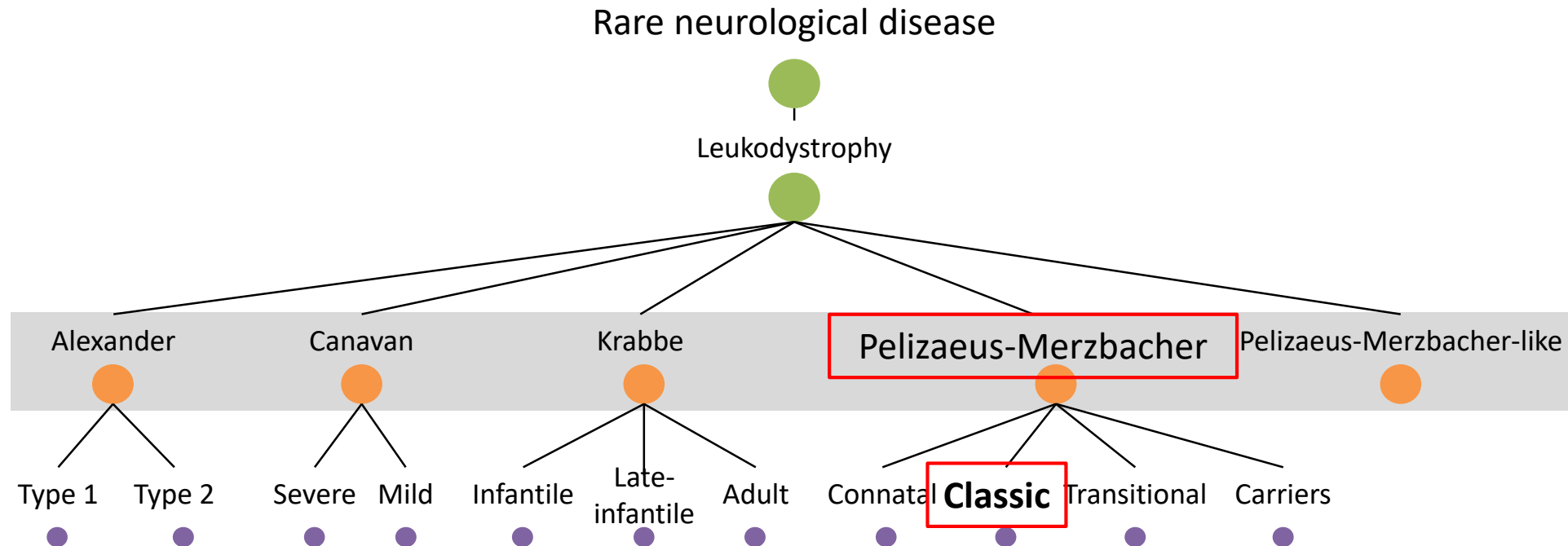
Coding patients **without a confirmed diagnosis (unsolved cases)**



Importance of Orphanet classification in codification

Classification using case 2

Improvement in the **precision of diagnosis**



- ☐ Orphanet nomenclature
- ☐ Orphanet nomenclature update
- ☐ Coding rare disease patients
- ☒ **Sites and tools**



www.rd-code.eu

Partners



Co-funded by the Health Programme of the European Union

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Latest News

- Achievements leaflet available
- Background Report on the "coding environment" of
- Orphanet Nomenclature pack available online

orphanet



www.orpha.net

INTRODUCTION

TOOLS

HELPPDESK

FAQ

Rare diseases are defined in the Europe as disorders that have a prevalence of less than 2 per 10,000 persons in the European Union population. Because of their individual rarity, rare diseases are under-reported, under-recognised and under-resourced in healthcare information systems. ICD-10 (International Classification of Diseases, 10th Revision), widely used around the world for disease coding, death reporting and, in some countries, for reimbursement and resource allocation in healthcare systems, covers only 8% of rare diseases. For these reasons, it is essential to establish a common language, with codes specifically for rare diseases, in order to effectively monitor and report on rare diseases. [Orphanet](#) is the international reference resource for information on rare diseases and orphan drugs, for all audiences. The Orphanet nomenclature of rare diseases (ORPHAcodes) has been recognised as the most appropriate nomenclature for clinical coding of rare diseases in Europe in a dedicated recommendation from the European Commission Expert Group on Rare Diseases (CEGRD, 2014). The nomenclature has also been designated at the global level by the International Rare Disease Research Consortium (IRDRC), as a resource contributing to the acceleration of rare diseases research. It is also designated as a core data resource for the life sciences community by the European Infrastructure ELIXIR. The RD-code project intends to support Member States in the implementation of rare diseases-specific codification systems based on the Orphanet nomenclature of rare diseases by providing a toolset to promote codification and data exploitation at the European level.

What are ORPHAcodes?

Nomenclature Description

The Orphanet nomenclature is produced in English and translated into 8 other languages: Czech, Dutch, French, German, Italian, Polish, Portuguese and Spanish. Each entity in the Orphanet nomenclature is defined by:

- **ORPHAcode:** a unique, time-stable and non-reusable numerical identifier. It is generated randomly by the database;
- a **preferred term:** the name most commonly accepted in the scientific community, according to the literature, or the term adopted by an *ad hoc* committee (consensus);
- **synonyms:** terms that are perfectly equivalent to the preferred term. The number of synonyms is indefinite and may vary depending on the language of translation. Acronyms commonly used to describe the disease are included as synonyms;
- a **definition.**

The rules for naming are found in [Naming rules for the rare diseases nomenclature in English](#) document; and also available in [Polish](#), [Spanish](#), [German](#) and [Japanese](#)

Classification description

The Orphanet nomenclature is classified by medical specialties to reflect the multidimensional nature of rare diseases. Every entity can belong to multiple specialties according to their clinical presentation, and so be included in several classifications.

For this purpose, the classification follows a clinical criterion and is divided by systems, generally corresponding to the organisation of the major medical specialties. For example, the respiratory system gives rise to the Orphanet Classification of Rare Respiratory Diseases, which corresponds to pneumology. Furthermore, hereditary, anatomical-clinical, imaging, histological, or even mechanistic criteria can be adopted according to practices. This leads to a branching according to the typology of the clinical entities, from the broadest to the narrowest:

- **Group of disorders**

Clinical entity defined by a set of common features shared by several disorders and used to group them together. It can be a category or a clinical group.

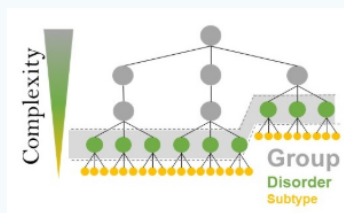
- **Disorders**

Clinical entity defined by a set of phenotypic abnormalities with a homogeneous evolution and allowing a definitive clinical diagnosis. It can be a disease, a malformation or clinical syndrome, a morphological or biological anomaly or a particular clinical situation in a disease or a syndrome.

- **Disorders subtypes**

Subdivision of a disorder. It can be a clinical subtype, an etiological subtype or a histopathological subtype.

(For detailed definitions, see [Orphanet inventory of rare diseases](#) document)



Different levels of Orphanet classifications

Orphanet classifications are hierarchical, meaning that the higher level includes all concepts present in the lower categories thus allowing different levels of granularity to be exploited.

How is the Orphanet nomenclature maintained and updated?

The Orphanet nomenclature and classification are produced by a team of doctors and scientists from Inserm Service Unit 14 (US14). The production and update of the nomenclature and classifications are based on scientific publications in peer-reviewed journals and in consultation with internationally identified experts for the various disease groups according to an established methodology: [Orphanet inventory of rare diseases](#). Sources are monitored continuously so as to identify:

- newly described diseases,
- recent data that may result in a change in the definition, nomenclature or classification of existing diseases,
- new classifications based on expert consensus.

ORPHAcodes can be discarded from the nomenclature but are tracked by Orphanet in order to ensure stability in the use of the Orphanet nomenclature. Whenever possible, an ORPHAcode still in use is provided. These removals are carried out for:

- **Deprecated entity**

An entry is deprecated when, after being an independent clinical entity, becomes part of another one as a result of the evolution of knowledge. As these diseases are no longer considered as an entity *per se*, they are excluded from the Orphanet nomenclature and classifications. Nevertheless, they are kept in the [Orphanet nomenclature files for coding](#) with a relationship (called moved to) that links them to the recognised and still in use entities.

- **Obsolete entity**

This generally involves the discovery of duplicates in the nomenclature (duplicates) or organisational categories that would no longer be used after the revision of part of the classification. Whenever possible, a relationship is made between the obsolete entity and an active ORPHAcode (called referred to).

- **Non rare disease in Europe**

Some entities are removed from the nomenclature because the current epidemiological knowledge is not coherent with the European definition of rare disease (less than 1/2000 people in EU).

The Orphanet nomenclature is used to code the diagnosis of rare diseases with an identifier, the ORPHAcode, in order to facilitate data collection, research and analysis. Several European countries have already adopted the ORPHAcode to identify rare diseases in their Health Information Systems, as shown by the recent inventory [Implementation of rare disease patient coding across member states](#), produced in the framework of the RD-ACTION Joint Action (2015-2018). In order to improve the collection of information on rare diseases, and to share standardised and consistent information at European level, the RD-ACTION codification workpackage published a series of documents ([Specifications for an integrated coding application with Orphacodes](#), [Standard procedure and guide for the coding with Orphacodes](#), [Recommendation for routine maintenance of codification resources for rare diseases](#)) to provide recommendations and tools to facilitate the use of ORPHAcodes in Health Information Systems.

The objective of creating a toolset for coding is to provide the computable information necessary to achieve implementation of ORPHAcodes in Health Information Systems, and ensure easier and accurate coding. The files are limited to codification needs and are delivered annually (July), accompanied by descriptive documentation. Previous versions are stored and a log of changes are made available to ensure traceability. In the future, in order to facilitate the interrogation of the nomenclature, Orphanet will provide (Decembre 2019) an API (Application Program Interface).

Orphanet Nomenclature files for coding

In order to allow the implementation of the Orphanet nomenclature in Health Information Systems, Orphanet provides a set of files available on xml format. It includes:

- the Orphanet nomenclature file,
- the Orphanet – ICD-10 cross-referencing file,
- a directory containing the Orphanet classifications files.



[Download ORPHAnomenclature files for coding](#)

These files are generated and made available at least once a year, in July, in 9 different languages: Czech, Dutch, English, French, German, Italian, Polish, Portuguese and Spanish.

They go with a [description](#) aiming to help users in the implementation process. Each file is described in details and the minimal information to allow data sharing, statistical reporting and interoperability is made explicit. This minimal information was previously included in the « Master file ». After reading this documentation, if you still have questions, you can visit our [Github Tracker issue](#).

The previous versions as well as the related change logs remain accessible and downloadable in [GitHub](#). Idem for the differential produced between the current version and the n-1 version.

According to the recommendations delivered by the European RD-Action Joint Action [Recommendation for routine maintenance of codification resources for rare diseases](#), the minimal information to allow data sharing and statistical reporting is the list of clinical entities defined by a definite diagnosis (disorder level of the Orphanet nomenclature or [Aggregation level](#)) and their proposed mapping to ICD-10 for interoperability. This minimal information was previously included in the « Master file » and you can easily find this data set in the Orphanet nomenclature files, according to the description available in [ORPHA nomenclature xml files content](#).

API

The API is currently under development and will be available in December 2019.

It will facilitate the implementation of the Orphanet nomenclature in Health Information Systems, and can ensure that from any query, the coder obtains an ORPHAcode belonging to the nomenclature, corresponding to the specific use case.

Ahead of the launch of the API, the details of [the possible queries and the data to be returned by the API](#) are available for consultation. If you have any questions, you can post an issue on our [Github Tracker issue](#).

 <http://www.orphadata.org/cgi-bin/ORPHAnomenclature.html>

ORPHANET NOMENCLATURE FILES FOR CODING


The Orphanet nomenclature is used to code the diagnosis of a rare disease with a unique and time-stable identifier, the ORPHAnumber (also named ORPHAcode) in order to facilitate data collection, research and analysis. These files provide the computable information necessary to achieve the implementation of ORPHAnumbers in Health Information Systems, and ensure easier and accurate coding. Orphanet provides a set of files in XML format, including: the Orphanet nomenclature file, the Orphanet ICD-10 mapping file and a directory containing the Orphanet classifications files. These files are generated and made available once a year, in 9 different languages: Czech, Dutch, English, French, German, Italian, Polish, Portuguese and Spanish.

The previous versions and their related change logs remain accessible and downloadable in the dedicated [RD-CODE Github repository](#).

ORPHA NOMENCLATURE PACK (JULY 2019) POWERED BY

9 langues

 **RD-CODE**

Language	Files 	Size
English	Orphanet_Nomenclature_Pack_EN.zip	3.32 MB
French	Orphanet_Nomenclature_Pack_FR.zip	4.56 MB
German	Orphanet_Nomenclature_Pack_DE.zip	2.85 MB
Dutch	Orphanet_Nomenclature_Pack_NL.zip	4.59 MB
Italian	Orphanet_Nomenclature_Pack_IT.zip	4.34 MB
Spanish	Orphanet_Nomenclature_Pack_ES.zip	4.55 MB
Portuguese	Orphanet_Nomenclature_Pack_PT.zip	2.63 MB
Polish	Orphanet_Nomenclature_Pack_PL.zip	3.64 MB
Czech	Orphanet_Nomenclature_Pack_CZ.zip	3.59 MB

[INTRODUCTION](#)[TOOLS](#)[HELPDESK](#)[FAQ](#)

This page is dedicated to answering questions related to the Orphanet nomenclature content and the implementation of ORPHAcodes in Health Information Systems. For this purpose, an online ticketing system that allows requests to be stored, tracked and made available to others has been set up. This system facilitates an agile and interactive workflow.

To post issues, please create an account in [GitHub](#).

orphanet-rare-diseases-issues / RD-CODE

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In the framework of the RD-CODE project, Orphanet provides a set of files, the Orphanet nomenclature files for coding, intended to be used to implement the Orphanet nomenclature in Health Information Systems for codification purposes. <http://www.rd-code.eu/>

14 commits 1 branch 0 packages 0 releases 2 contributors

Branch: master New pull request

Find file Clone or download

waedak ORPHAnomenclaturepack			Latest commit 043442d on 9 Oct 2019
Classifications	ORPHAnomenclaturepack		3 months ago
ORPHA_ICD10_mapping	ORPHAnomenclaturepack		4 months ago
ORPHAnomenclature	ORPHAnomenclaturepack		4 months ago
README.md	ORPHAnomenclaturepack		3 months ago

README.md

About RD-code

The [RD-code project](#), co-funded by the European Union's Third Health Program, intends to support Member States in the implementation of rare diseases-specific codification systems. Starting with countries that have no systematic implementation of the Orpha codification yet, but that are actively committed already in doing so, this project will provide a sufficient real-world implementation experience to be captured by other countries in the future.

In the framework of the RD-CODE project, Orphanet provides a set of files, the Orphanet nomenclature files for coding, intended to be used to implement the Orphanet nomenclature in Health Information Systems for codification purposes. This

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#3 opened on 29 Oct 2019 by GAIN-registry

1

[The Classification files in the Nomenclature pack](#) [HIS issue](#) [Norway](#)

#2 opened on 17 Oct 2019 by LeneMartinsen

4

[example 1](#)

#1 opened on 13 May 2019 by waedak

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"It's something so rare, Google doesn't know."

Thank you for your attention!