



## **D4.3 Mid-term report on lessons learned**

**June 2024**

**OD4RD**  
**Orphanet Data For Rare Diseases**

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## Context

This document represents deliverable 4.3 of the OD4RD2 project, which has received funding from the European Union. It contains the lessons learned by the members of OD4RD2, work package 4. The document has been produced by the leaders of the OD4RD2 work package 4. The OD4RD2 project was launched April 1:th, 2023 and is planned to continue until the end of 2025. The OD4RD2 project represents a continuation and renewal of the OD4RD project which was launched in January 2022 and was active until March 31:st, 2023. More information on the activities and deliverables of the OD4RD can be found at: <http://www.OD4RD.eu>

## Disclaimer

The findings and conclusions in this report are those of the contributors, who are responsible for the contents; the findings and conclusions do not necessarily represent the views of the European Commission or national health authorities in Europe. Therefore, no statement in this report should be construed as an official position of the European Commission or a national health authority.



## Background

There are more than 6,000 distinct rare diseases (RD). In Europe RD is defined as a disease that does not affect more than 1 person per 2000, or 0.05%, in the European Population. Despite the rarity of each individual diagnosis, an estimated 30 million people in the European Union suffer from a rare disease (Nguengang Wakap S, 2020). A substantial proportion of these diseases manifest in childhood and are chronic conditions, often associated with lifelong impairment. Many are hard to diagnose, sometimes due to the rarity, and as a result often diagnosed very late.

Due to the severity and substantial impact of RD, advances in diagnostics and therapy in the field are particularly important, but also particularly challenging due to the small number of identified patients of each diagnosis. In addition, the amount of data needed for research may only be obtainable by compiling data from several countries. To this end, data must be structured in such a way that it can be combined into a cohesive data collection.

In order to permit tracking of rare diseases in health care systems, they must be designated a unique code, as a means to separate them from other more frequent diseases. In many disease coding systems, such as ICD-10, which is in common use, a large number of RD lack a unique code for identification, which complicates the identification of and follow-up of RD patients. It was stated as early as 2009, by the Council of the European Union 8.6.2009 for action in the field of RD, that: “An appropriate classification and codification of all RD is necessary in order to give them the necessary visibility and recognition in national health systems.” (Official Journal of the European Union, 2009/C 151/02). To improve the coding of RD the use of ORPHA codes was recommended by the Commission Expert Group on Rare Diseases in 2014 and later selected a best practice for coding RD, by the European Commission (EC) in 2017 (<https://webgate.ec.europa.eu/dyna/bp-portal/transferred>), as the exploitation of ORPHA codes’ annotated Health data increases the visibility of people living with a RD (Mazzucato M, 2023), (Gunne E, 2020), (Chiu ATG, 2018).

Several projects have been launched and completed in the quest to improve the health and life situation for RD patients in Europe. The RD-Action project originated guidelines and recommendations for introducing ORPHA codes into national health information systems and defined the minimum level of granularity adequate for aggregating European data into a reliable and useful data collection. The products of the RD-Action were applied by the previous project RD-CODE which began the work of implementing ORPHA codes into national coding systems of four European countries. The experience was used to refine and describe successful working methods and strategies for implementing ORPHA codes in national health care systems.

The lessons learned during the RD-CODE project was used as a starting point for further work on supporting the use of ORPHA codes in the OD4RD project. The OD4RD project specifically aimed at supporting the introduction and facilitate the use of ORPHA codes in Health care providers (HCP) hosting or linked to a European Reference Network (ERN), as well as improving the Orphanet nomenclature by using the expertise within the ERNs. Initially 14 countries participated, but this was extended to 20 countries currently participating in OD4RD2.

During the OD4RDs initial stages it was revealed that the state of RD coding was diverse when comparing the participating countries. The situation ranged from no implementation or use of ORPHA codes in the country, to ORPHA codes already being implemented and in all hospitals. (deliverable 4.1, [http://od4rd.eu/03-deliverables/D4.1 OD4RD State-of-play-survey.pdf](http://od4rd.eu/03-deliverables/D4.1_OD4RD_State-of-play-survey.pdf)) Individually adapted action plans were produced for each country in order to provide support adequately adapted to the healthcare system in each country (deliverable 4.2, [https://od4rd.eu/03-deliverables/Deliverable 4.2 OD4RD National Action Plans.pdf](https://od4rd.eu/03-deliverables/Deliverable_4.2_OD4RD_National_Action_Plans.pdf)). The OD4RD2 project is a renewal and continuation of the OD4RD project and similarly aims to improve the use and implementation of ORPHA codes in the participating countries by specifically targeting the health care providers (HCPs) in active collaboration with one or several ERNs. The actions and deliverables of OD4RD2 largely mirrors the initial OD4RD project and has the benefit of taking off where its predecessor finished.

Orphanet expertise and status as a long-lasting, well-established consortium is a great asset in the quest to improve the knowledge and care available about RD and to RD patients.

## Project Objectives

The OD4RD2 project is organized in 5 distinctly work packages (WP), each with designated goals and objectives. The project is finalized upon completion of all WP objectives. This report is a deliverable of work package 4, of which the overall objective is to “...ensure support for the local implementation of ORPHA codes in national HCPs hosting ERNs and national HCPs linked to ERNs by establishing Orphanet national nomenclature support hubs.”. To some extent establishment of national hubs was completed before OD4RD2 commenced, therefore the support provided from the hubs may be viewed as the main activity during this phase of the project. This report aims to summarize the lessons learned during the establishment and operation of local national hubs tasked with supporting the implementation and use of ORPHA codes, during the course of OD4RD2. The lessons learned were initially described as part of the participating countries annual action plans, year 1 and is summarized in this document to identify common denominators as well as unique perspectives.

National action plans were devised by each national hub, outlining a path to support the national implementation of ORPHA codes. Each plan was constructed based on the unique state of play in each country (see deliverable D4.1 for survey results and D4.2 for content of national Action plans) and the described activities tailored to support ORPHA code implementation in the current RD landscape of the country. The lessons learned during Y1 as well as metrics for selected indicators were collected from each participating nation and is summarized in this report.

Several measures have been taken to facilitate and support the activity of the member countries in the implementation process. These measures include providing trainings for the national hubs, information material directed towards decision makers, institutions, and the public.

## Methodology

All participating national hubs were asked to fill in a template supplied by the WP4 coordinators. The template consisted of distinct sections, focused on the lessons learned and performance metrics for selected indicators, respectively. The collection was made for the period of April 1st, 2023 – March 31st, 2024. The Lessons Learned were gathered by asking the hubs to describe which implemented measures had been perceived as successful as well as which obstacles had been encountered. In addition, the hubs were encouraged to include any remedies to the encountered obstacles, as well as reflections on reasons for success. Performance metrics was collected by collecting numeric values or by yes/no answer depending on the activity performed. Data on participation in the state of play survey, ERN survey, delivery of the national action plan and creation of a national GitHub helpdesk were collected by yes/no answers indicating if the activity has been performed. Data on trainings were collected by requesting the number for selected metrics including the number of trainings held, participants attending, medical departments represented, and ERN-members (medical departments) involved. In addition, any results on training feedback surveys of knowledge gains, if available, were collected as free text. Metrics on the activity of the national help desk was collected as the number of tickets received in total, requests handled entirely by the national desk and requiring support from the coordinating as well as how many of the last were forwarded to the coordinating team using GitHub. In addition, data on the number of tickets was requested separated by topic (Coding, Nomenclature or Other) and the role of the user who made the demand (Clinicians, Hospital management, Coders, IT personnel or Other). Finally, links or descriptions to produced articles and communications produced by the national hub during the specified period was also collected.

The results were obtained from 17 of the participating countries of WP4. Orphanet Sweden, in the role of Co-lead of WP4 in OD4RD2 performed the task of compiling the results of the lessons learned documents. All contributions were read, and common themes identified. Both success factors and obstacles were considered equally relevant.

The OD4RD Mid-term workshop, which took place on 6-7 July 2024, provided additional lessons learned which will be presented in the project deliverable D1.4 Mid-term Workshop Report.

## Participating countries

Austria, Belgium, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Romania\*, Slovenia, Spain, Sweden, the Netherlands.

The coordinating team of the project and of the Orphanet Network is located at Inserm, France. On this account, France has not developed an Orphanet Nomenclature National Hub in the frame of the OD4RD project but has continuously provided supporting activities for the implementation of ORPHAcodes since implementation of the French 2 National Plan on RD, predating the beginning of OD4RD in 2022. Annual trainings are organised with the French RD National Reference Networks and an active helpdesk exist since 2019.

\*Romania was still not able to carry out activities as of June 2024, discussions are ongoing to assess their capacity to start their activities as of September 2024 for the last year and a half of the project.

## Lessons learned

Despite the varying starting points of the participating countries, both the lessons learned and the identified key factors for success were similar in several countries.

A number of countries identified officially mandated or incentivised use of ORPHA codes as a success factor. This was mentioned as a success factor by national hubs who had such a regulation or recommendation in place (Bulgaria, Germany, Italy). On the other hand, the absence of such recommendations has been identified as an obstacle by other hubs (Belgium, Finland, Poland). While there is no data yet available that shows the reliability of the coding of RD since the introduction of the mandatory requirement (Germany). In addition, Switzerland reported discussions are ongoing at the federal level to render the implementation of ORPHA coding compulsory.

### 4.1 Lessons learned on trainings

The report from the last year on lessons learned showed that following the ‘training for trainers’ program, more than 60 local trainings or workshops were held by 14 national hubs, with more than 1,900 participants representing more than 110 ERN expert centres. Through the period of April 1<sup>st</sup>, 2023 – March 31<sup>st</sup>, 2024, the collected data show that 60 training sessions in the local language have been held in 14 of the national hubs, with a total participation of over 1200 professionals attending. Attendance rates are higher than the reported number, since all national hubs did not record how many attendees were present at each training.

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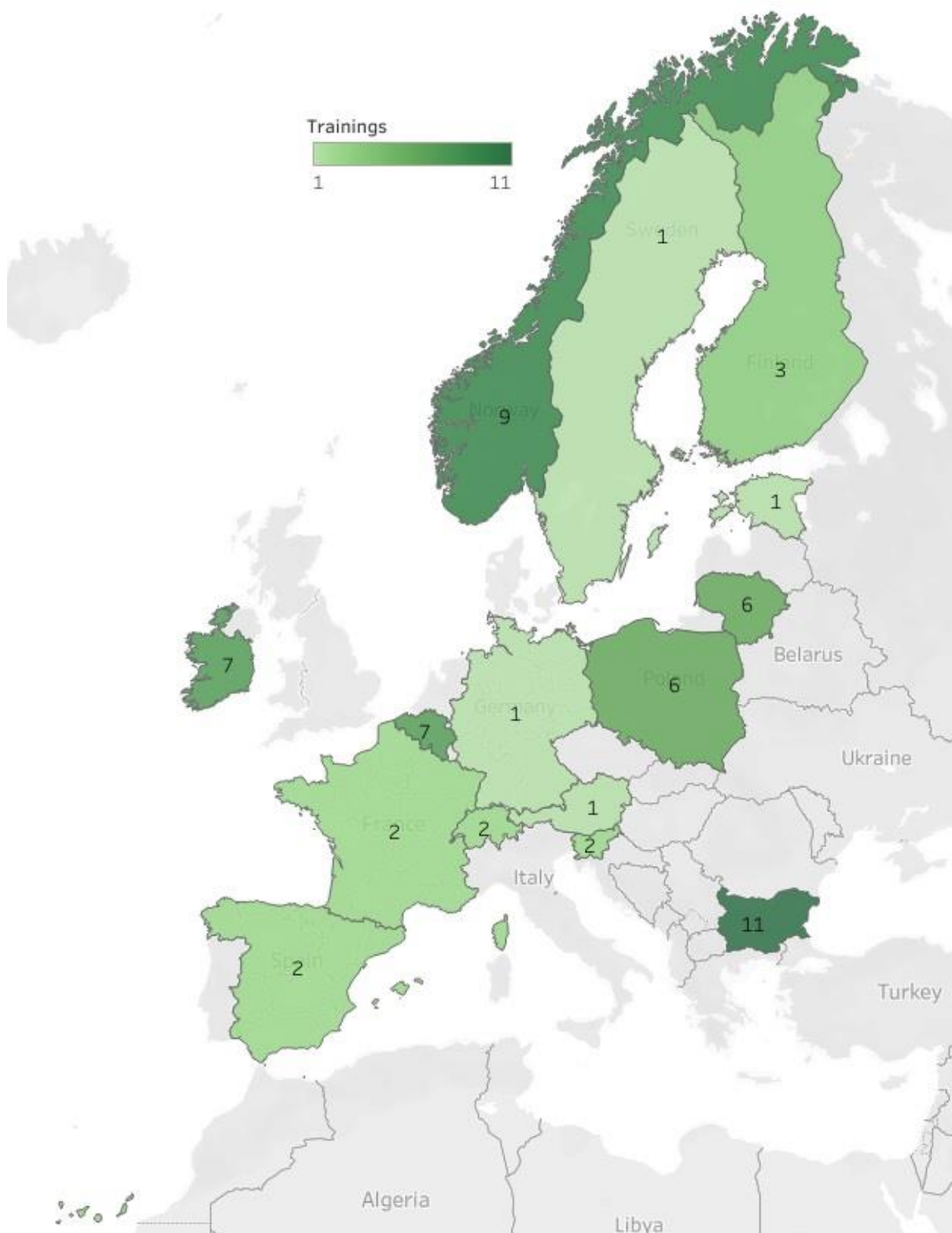


Figure 1) Map visualization of the total number of trainings held in each member country, with a maximum of 11 trainings performed by Orphanet Bulgaria. The map does not include



*countries who did not report any trainings during the period April 1st, 2023 – March 31st, 2024, or planned trainings after March 2024.*

In some instances, the countries who have been able to provide a high number of trainings, are also the ones who reported having successfully navigated obstacles and created incentives that enabled their target audience to attend or actively participate with the trainings. The same applies to countries who have not held any trainings during the first year, but who are planning future trainings. The obstacles reported from the national hubs in the lessons learned included an extensive workload required to adapt provided materials to different formats such as e-learning (the Netherlands) and for performing trainings as they were originally planned (Italy). Both countries are currently planning future trainings during the coming year. One country (Portugal) reported to postponed the training to last quarter '24, as a protocol was being established between the Competent Authority – General Directorate of Health and the Training Academy of the Shared Services of the Portuguese Ministry of Health, and this collaborative process will benefit the National Action Plan in excellence and innovation.

As mentioned, several hubs reported adapting their trainings and the structure of how they held their trainings as a successful measure. Belgium reported difficulties in achieving a high attendance rate as well as a reluctancy from the intended participants to engage in trainings exceeding 1.5 hours. The measures implemented varied between countries but reducing the training session time was a common theme for several countries (Belgium, Spain). Tailoring the content (the Netherlands, Belgium) and format for the target audience (Belgium, Spain, the Netherlands) was also noted. Contrary to this Poland reported success by inviting a large number of participants from several units including different ERN members in general ORPHA coding trainings.

Several countries reported translation of trainings or other resource materials such as classifications and trainings as a having a positive impact (Lithuania, Poland, Spain). Due to being a multilingual country Belgium reported needing multiple translations as a challenge. The strategies and tools that have been reported to have the most beneficial result in increasing training participation and interest has been the ERN-survey, the tailoring of the trainings to meet professionals time constraints and needs, as well as translating communication material and trainings into the national language to increase accessibility in the member country.

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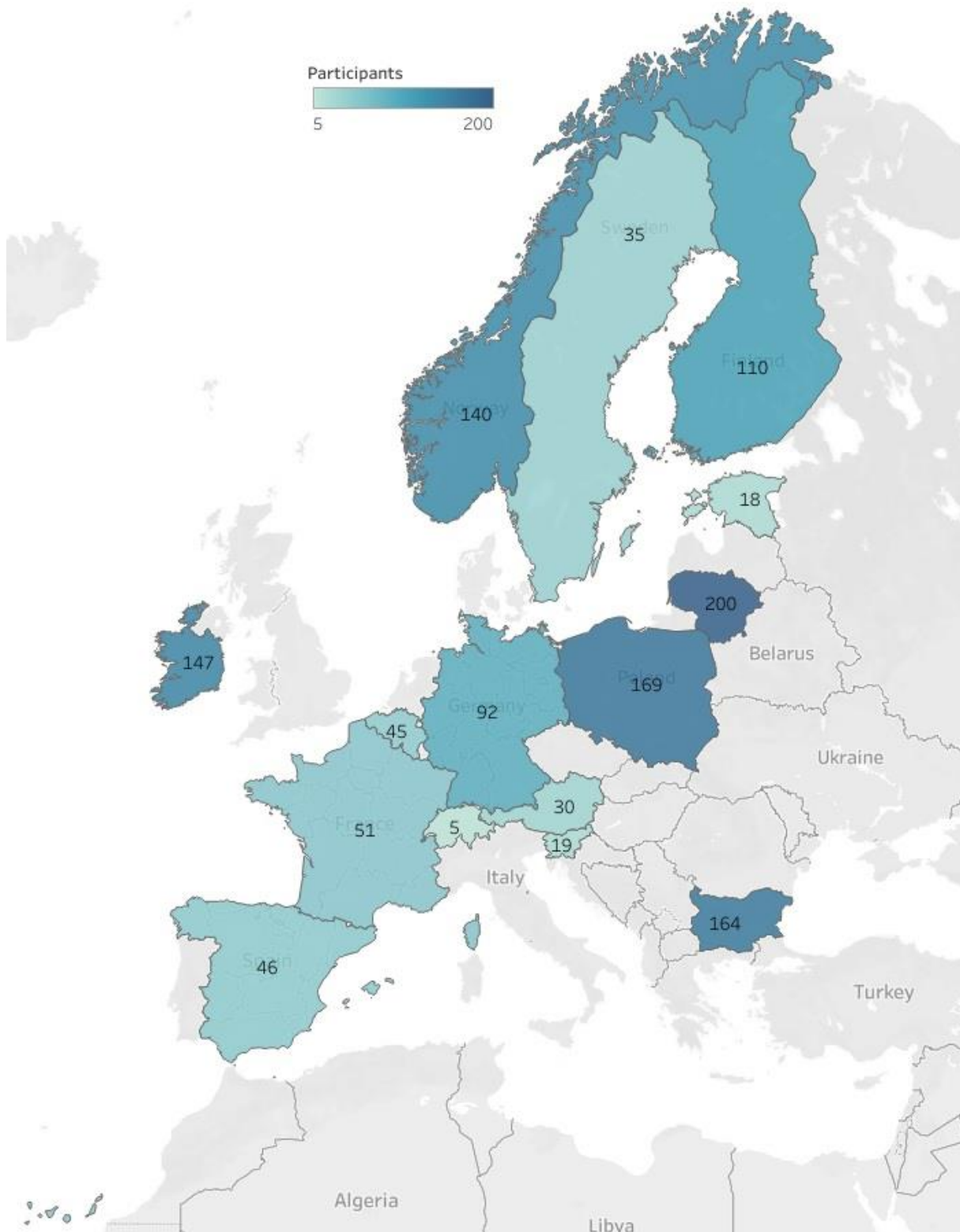


Figure 2) Map visualisation of the total number of participants in trainings held by the participating countries. Lithuania reported the highest number of participants with an estimated 200 attendees in total.

The distribution of the number of participants reported did not clearly correspond to the number of training sessions provided in each country, which may be a reflection of the different approaches of trainings. The largest numbers of participants were reported by Lithuania who performed a total number of 6 trainings but managed to include 23 participating departments resulting in over 200 participants amongst the 6 training sessions. The same number of trainings (6) were reported by Poland who reported 169 participants (30 medical departments, 8 ERN members) and one more (7) by Ireland attended by 147 participants (representing 1 medical department and 1 ERN member). In contrast Bulgaria performed nearly twice as many trainings (11 in total) and reported a similar number of participants (164 participants, 10 medical departments and attendees from 3 separate ERNs). Germany in turn reported one held training, but with a high participation of 92 participants.



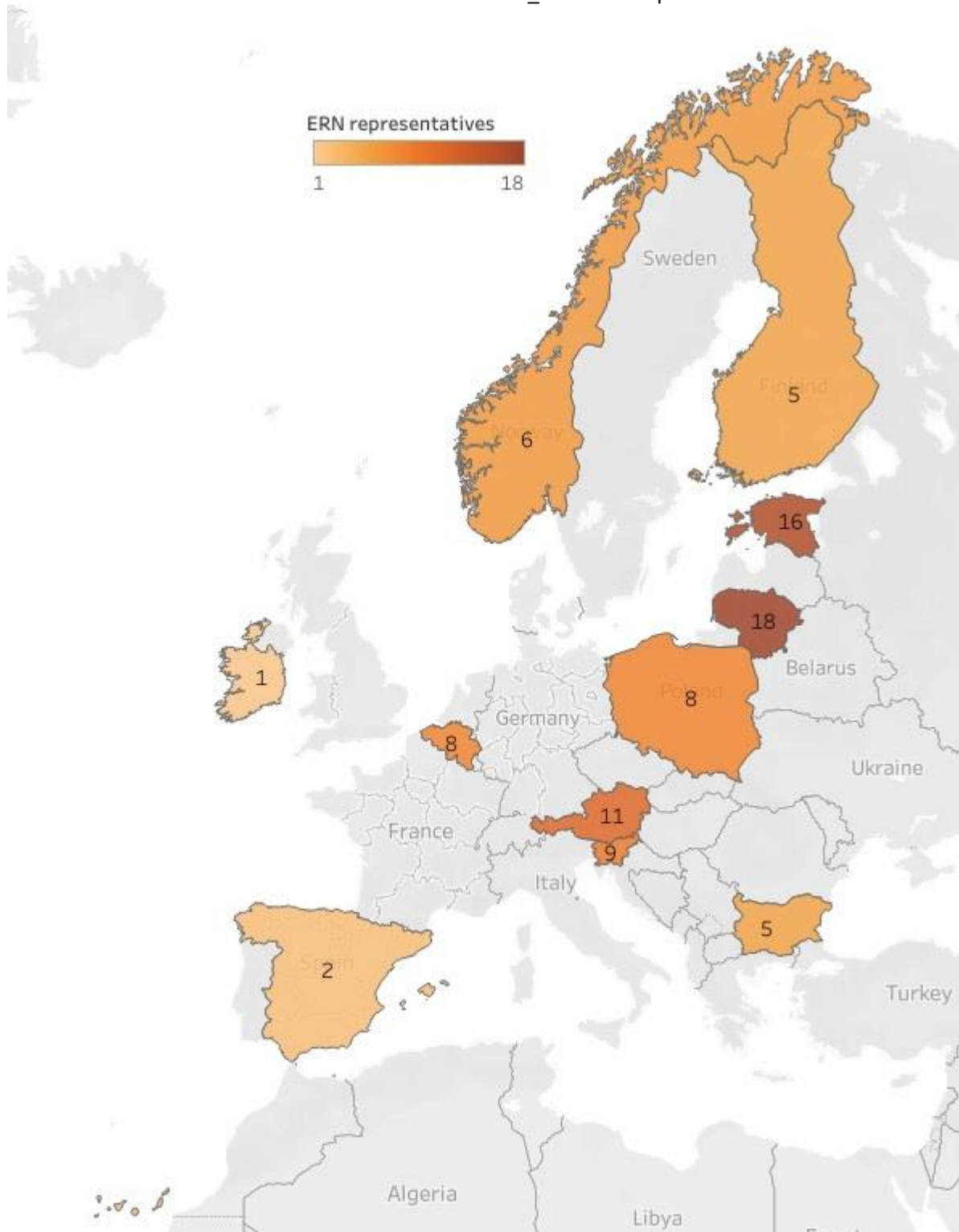


Figure 3) Map visualization of the total number of ERNs participants attending at the national hub trainings. The national hubs have reported the participation of ERNs in some instances as individuals from an ERN member department and in other instances as the number of medical departments and not individual attendees. The highest number of ERN participants (18) were reported by Lithuania. Bulgaria reported separated numbers

representing 5 attendees connected to 3 separate ERNs as did Spain with 15 attendees from 2 separate ERNs.

The number of ERNs reached by the trainings was mainly reported as the number of attending medical departments, however some countries also listed the attending ERNs by name and in one case the number of individual attendees.

Comments of note on trainings:

#### Spain

*“Adapting the format of the training courses. Due to the participant’s little availability of time, having them work with session 1 and 2 contents on their own and connect only for a brief summary, Q&A session and hands-on session seems to be a good option.”*

#### Belgium

*“Low participation in the trainings: despite the advertising made (mailings, publication on the national website, etc.), some professionals still don’t know the existence of the trainings; low attendance due to the busy schedule of the HCPs (challenge of finding a date); even when a date is fixed, the number of participants per centre is relatively low.”*

Rundown on lessons learned from trainings:

Several successful trainings have been held, often having been adapted successfully to the context of the country and the specific needs of the target audience. Reducing the time required and exploring the inclusion of new elements has been a notably successful measure.

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### 4.2 Lessons learned on increasing awareness

Increasing awareness of ORPHA codes among various stakeholders was reported as a success factor by Bulgaria and Poland, where the latter reported an increased interest in ORPHA coding and training by establishing contact with all polish HCPs. Lithuania reported conferences and workshops focused on raising awareness as successful and Bulgaria identified a need for continuous efforts in raising awareness within health authorities, software providers, patients, students, and medical professionals as a requirement for success. Latvia had awareness raising activities aimed at patients. One of the activities of the Latvian team being that patients could call to receive information on the ORPHACode of their own disease, which received positive response. Spain has also performed successful information

activities targeting patient organizations and additional such occasions have been requested by the patient organizations. Belgium and Italy reported difficulties in raising interest in health centres which do not currently use ORPHA codes.

Many hubs reported having successfully arranged meetings with various stakeholders including IT (Sweden, Portugal) health care authorities, RD registry, university hospital networks (Sweden, Portugal), and professionals (Finland, Ireland, Sweden and Portugal). Switzerland opted for recurring monthly meetings with a coding working group including representatives from the national RD registry and Norway identified continuous meetings to inform and train clinicians as a key factor for having professionals “onboard.”

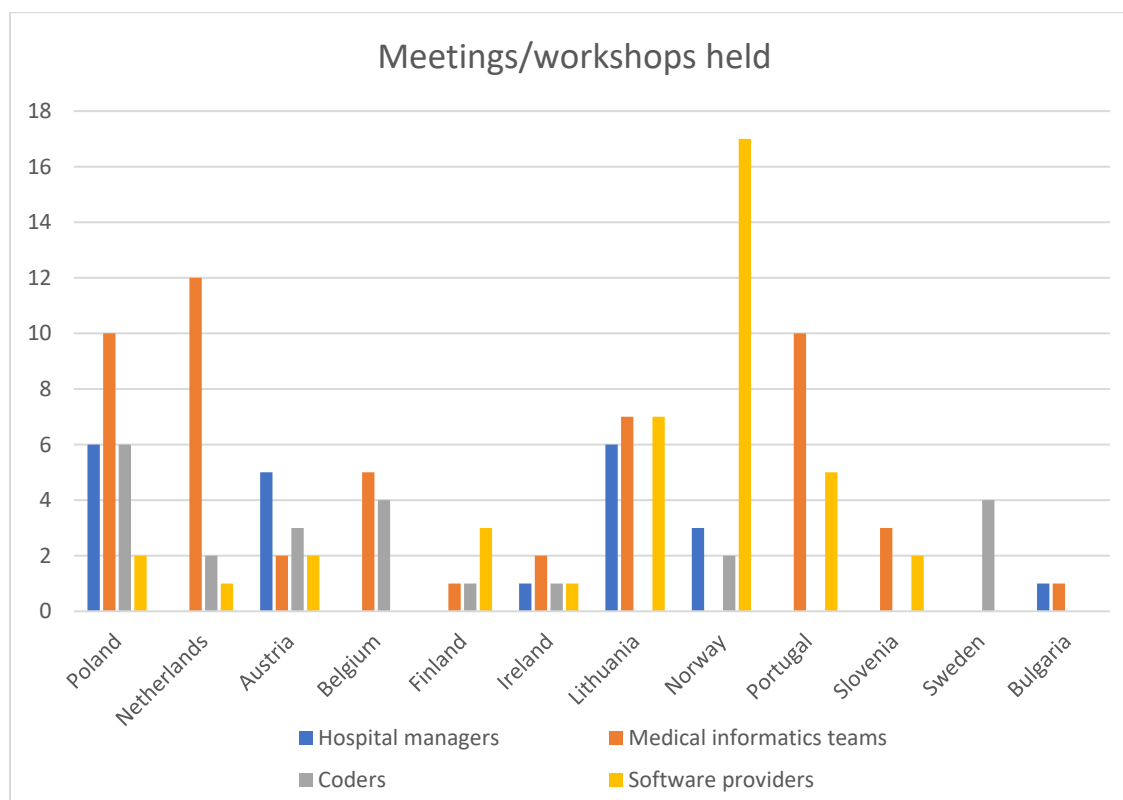


Figure 4) In addition to reporting the number of meetings held, countries were asked to state which type of professionals attended the meetings. Data was collected for 4 predefined categories (Hospital managers, medical informatics teams, coders, or software providers). The number of meetings with representatives from each category can be seen in the graph.

Switzerland reported having no formal meetings but having continued communications by phone and email with IT teams. Spain reported holding several meetings with both medical information hubs, coders and registries and health authorities, but did not specify an exact number of meetings for each category. Portugal organized a meeting which reached a total of 190 health care professionals, including at least 10 Hospital managers.

Three countries, Estonia, Germany, and Latvia reported not having held meetings while Italy did not provide data on meetings held.

Belgium reported mandating use of ORPHA codes in the national RD registry as a path forward in incentivizing the use of ORPHA codes and in Latvia the process of starting an RD registry is under way. In Finland ORPHA codes have been successfully implemented in the national care

registry. In the national RD registries in Norway and Switzerland work is ongoing to enable data registration from additional sources. Switzerland stresses the importance of the Swiss RD registry by defining its launch as a key moment to reach out to the stakeholders involved in RD coding but also reports the requirement for informed consent by the patient as hampering to the willingness of clinicians to participate.

Comments of note:

#### Norway

*“ National hub staff with clinical experience has regular meetings where informing and training professionals to use ORPHAcodes is the focus.*

*This has been key to get so many professionals onboard. The reason is that the message is conveyed with so much more conviction and strength when it is communicated by peers with the same experience in the clinic as the professionals.”*

Rundown on lessons learned from increasing awareness:

In conclusion, a large number of meetings have been held directed toward different stakeholders, which have contributed to increasing the knowledge of ORPHAcodes both among patients and health care personnel.

### 4.3 Lessons learned on national helpdesk

Most of the participating countries reported having implemented a GitHub based help desk and as of June 2024 there are only 3 junior National Hubs (i.e. having joined the project with OD4RD2) with no GitHub account yet: Bulgaria, Romania and Estonia.

In addition, Slovenia decided being accessible primarily by e-mail as it was a solution more suitable to the state of play in the country. Ireland, Latvia, Lithuania, and Portugal have created GitHub accounts but are currently not using them for national helpdesk activities. Latvia reported receiving several requests to the helpdesk. Norway implemented a GitHub solution where the ONT (Orphanet National Team) manually register tickets received by email. This is due to the hospital IT security regulations, which are too strict for clinicians to access the site through their work computers. In addition, Norway has also complemented the helpdesk with a designated form for accepting requests to increase compatibility with HCP IT policies. Due to this helpdesk structure the numbers reported by Norway inside the GitHub tool is limited to the requests which could not be answered directly by the national team. Lithuania was unable to provide an exact number of requests received but noted that phone and email was the primary route of contact. In addition, they reported receiving a substantial

number of inquiries on nomenclature and the correct usage of ORPHAcodes with most questions having been raised by clinicians but accompanied by a substantial number of requests from their IT team.

In many countries it is evident from the number of requests received that the national helpdesks are in active use with the main topic of requests concerning coding followed by nomenclature. The distribution between topics varies between countries with some displaying a clear predominance for one subject, for instance in Germany (coding), the Netherlands (Nomenclature) and Latvia (coding). With the exception of Norway and Austria, questions on topics besides nomenclature and coding were fewer in occurrence in all countries.

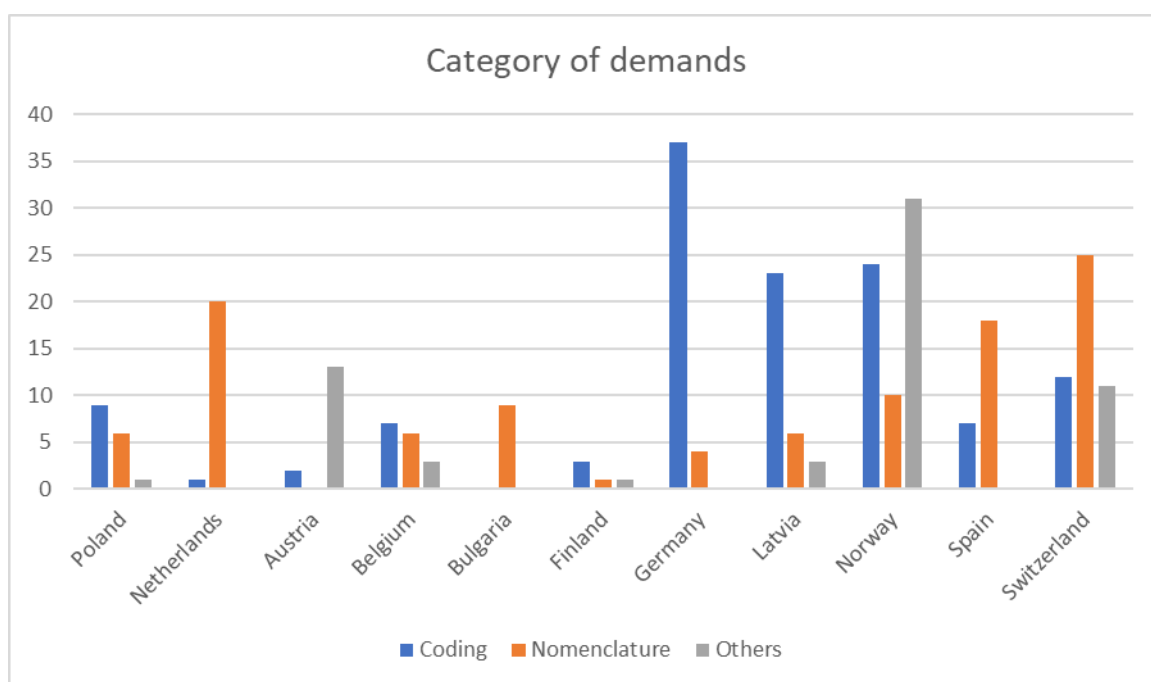


Figure 5) Overview of the tickets received by country, separated into predefined categories of the type of request (coding, nomenclature or other). Some countries who reported questions received by other means than the GitHub helpdesk are included in the diagram. The Netherlands reported one of their tickets as being received through GitHub. Most questions on coding were received by Germany while Switzerland had the highest number of questions on nomenclature, in addition Norway had the highest number of questions on other matters.

Several national hubs reported not having received any requests through GitHub (Ireland, Italy, Sweden). Ireland reported requests received outside of the GitHub context requiring support from the coordinating team, but not forwarded through the GitHub channel. Some countries did not report a specific number of tickets received through their GitHub (Ireland, Lithuania, Spain), but noted that demands or tickets had been received through other channels.

Orphanet Latvia noted that they had received a total of 32 tickets or demands. Orphanet Bulgaria received a total of 9 tickets, which fell under both nomenclature and coding.

The combined number of tickets by all countries are in majority concerning coding requests and demands. Orphanet Germany has reported the highest amount of coding requests. This



is in line with the heightened need for support, as ORPHAcodes have been made mandatory in Germany.

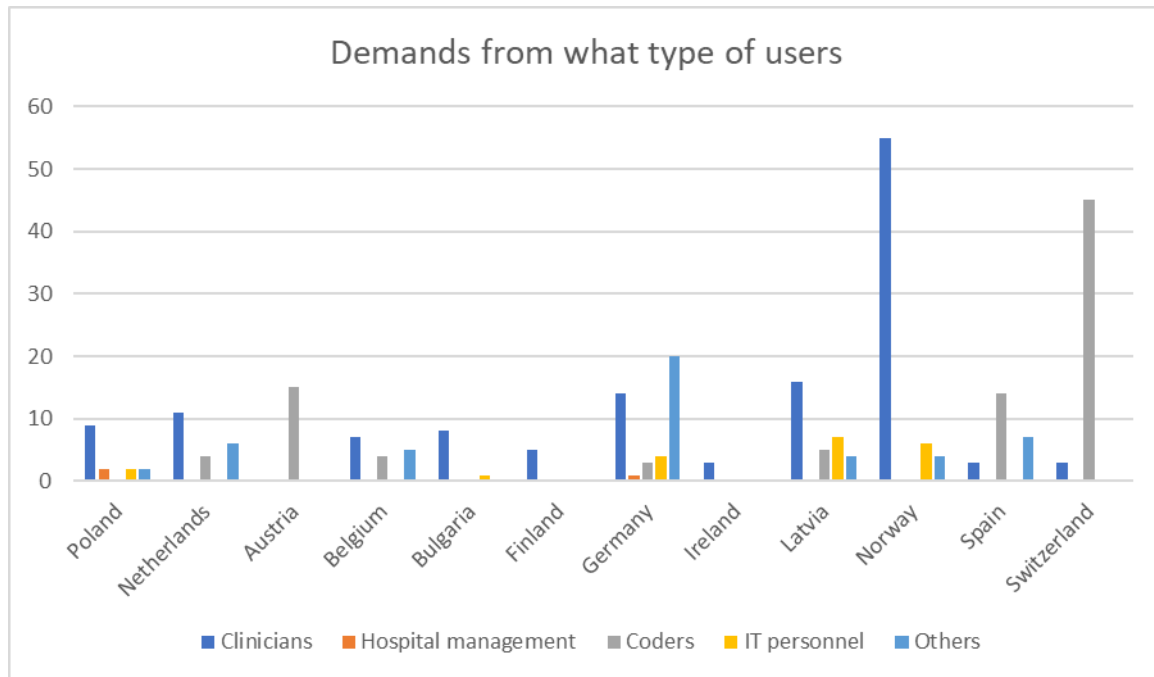


Figure 6) The diagram displays the tickets received by GitHub for each country separated by the role of the user submitting the request. Data was collected in predefined categories: clinicians, hospital managers, coders, IT personnel or other. Switzerland has the highest number of questions from coders. Norway reported all their questions were submitted by clinicians, as did Finland and Ireland. Austria reported only receiving requests from coders.

For eight of the responding countries (Belgium, Bulgaria, Finland, Ireland, Latvia, Norway, Poland, and the Netherlands) clinicians were the most frequent submitter of questions. This is contrasted by Switzerland, and Austria where coders were by far the most frequent submitters, this was also the leading category of submitters in Spain but with a smaller difference in numbers.

Ireland reported receiving questions on alignment of ORPHAcodes with SNOMED CT as well as on classification and questions on coding from several ERNs. Some variation in the roles of users submitting the tickets may be explained by the differing state of play in each country.

Comments of note:

#### Slovenia

*" We believe that Slovenia is too centralized and too „small“ for establishing ticketing system and additional platform, therefore we started with a simple e-mail. If this proves to be insufficient, we will implement changes."*

### Bulgaria

*“ Most assistance requests, predominantly received via email, are managed by incorporating Orphacodes into coding systems. We provide them with the Orphanet Nomenclature Pack and API files available from Orphanet.”*

### Finland

*“ We have implemented ORPHAcoding in collaboration with the chief physicians of the RD units of the university hospitals. Most of the questions from clinicians, and there has been some tens of them, have been received and answered by the local RD units of the university hospitals.”*

In addition to the GitHub helpdesks implemented by the national hubs a central helpdesk is available at <https://github.com/OD4RD/Main-Help-Desk> for questions which cannot be handled solely by the national hubs. For each recurrent question (either received via the main helpdesk or the national helpdesks), a dedicated Q&A has been developed in a generalised and standardised way in order to facilitate common knowledge and provide a sustainable Orphanet reference resource **GitHub Wiki page** <https://github.com/OD4RD/Main-Help-Desk/wiki> . The central helpdesk and the wiki page are administered by the coordinating team in France.

## Rundown on lessons learned from national helpdesks

Many countries are utilising additional means of contact in addition to the GitHub helpdesk, primarily as a complement. There is variance in the type of questions asked as well as in the role of the professionals submitting the requests, but the majority of questions concerned coding and was submitted by a clinician.

### 4.4 Lessons learned on ERN-survey

During year 1 of OD4RD2 national hubs working within WP4 performed a survey on ORPHAcoding usage and knowledge from all their national expert centres who are ERN-members. This is the first time this type of survey has been conducted within the OD4RD project. The results showed that the survey is a very useful tool to gain insight into the

currently complex issues regarding the perception of ORPHAcodes, their usage in each country and how to circumvent some of the obstacles which prevent ORPHAcodes implementation. Several member countries have mentioned the nationally conducted ERN-survey as an excellent source of data when trying to assess the perception and knowledge surrounding ORPHAcodes in their country. The collection of comments from professionals partaking in the survey has resulted in a better understanding of the specific needs of professionals in each country, as well as contributing to new ways to improve the perception of ORPHAcodes.

Comments of note:

#### Germany

*“ Despite the fact that the use of ORPHAcodes is legally mandatory for coding, it seems that according to our ERN survey results, not all ERN member medical departments use ORPHAcodes to report to their ERN (the survey results indicate that more departments don’t report ORPHAcodes than departments that do, however, due to the low percentage of survey participants, this cannot be said with certainty for the group of all ERN members).”*

#### Italy

*“ The ERN survey recently delivered in our country has shown the professionals’ attitude to use the Orphanet nomenclature and provided us some suggestions to figure out why apparently they do not need support from our team. In particular, we found that the professionals that not use ORPHA codes to send data, are not requested to follow this practice, either by the ERN coordination or by the local health authority. This could explain the apparent lack of interest by some professionals in increasing the knowledge about ORPHA coding. ”*

### Spain

*"Participation in the ERN Survey has been very high (>90%) and it can be attributed to the mailing strategy followed. Here we would like to highlight that a significant change can be observed when comparing the results of the ERN survey from 2022 and those from 2024. Although this can be attributed to many circumstances, we believe that it is largely due to the OD4RD/OD4RD2 projects."*

### Portugal

*" The ERN Survey conducted was an excellent opportunity to assess the communication channels between Units integrating ERNs within each HealthCare Provider and the National Orphanet Team/Competent authority. The results have shown ways of improve and compile information on the needs and the state of the art on OrphaCoding as well as updating Coordination contacts."*

### Sweden

*" The only non-verbal feedback we have gotten has been through the national ERN survey, which indicated both neutral, negative and positive feedback. A number of professionals did however express an interest about and need for more information and education about ORPHAcodes after the completed survey, which has been positive to see. "*

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Rundown on lessons learned from the ERN-survey:

In conclusion the ERN survey was an appreciated addition to the activities performed within the project and provided valuable insights into the perception, knowledge, and use of ORPHAcodes within the participating nations.

### 4.5 Lessons learned on RD coding implementation

Based on the collected lessons learned, there is an observable difference in the starting position from country to country. Some countries have come much further in the implementation process than others. Support from authorities and a clear structure have been

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important for a successful implementation. Within the lessons learned we have been able to find common denominators where many of the countries face the same problem, despite the varying conditions in each country. Many countries faced difficulties due to missing support for implementation of Orpha codes in their national infrastructures. This lack in support ranges from explicitly requiring coding be done using other coding systems, to not having an opinion on coding.

Several countries reported a lack of incentive to bring in an additional coding system when it is not required by the national authorities and would likely increase the workload of clinicians. Some countries have reported success by central curation of Orpha codes and in several instances by utilizing already implemented coding structures present in electronic health care records (EHR: s). This has taken the form of adding ORPHAcodes to in-use infrastructure, alongside already present coding system/s. This has been performed by adding the option of registering and transmitting ORPHAcodes, when relevant, by following the already implemented structure used for coding.

The other strategy has been “If you can’t beat them, join them” and aims to translate from an implemented coding system, commonly SNOMED-CT, for which this would be easier due to its higher specificity as compared to ICD-10 into ORPHAcodes when possible.

As an obstacle the need for dual coding systems have been mentioned in several reports. Due to the need for coding non-RD patients, systems for coding non-RD are already implemented and well established. Since ORPHAcodes is a well-established complement coexisting with non-RD systems, having dual coding nomenclatures is inevitable. However, a lot of effort has been carried out to address this well identified burden and Orphanet also provides transcoding data. This will increase complexity and raises the need to motivate the introduction.

In Finland, this issue has been tackled by implementing ORPHAcodes in the national Care Registry of THL, allowing hospitals to send data on ORPHAcodes from the electronic patient report systems to the national registry similarly to what is done for ICD-10 codes.

Orphanet Belgium states that *“the Terminology Centre is acting as the SNOMED National Release Centre of Belgium, responsible for distributing and managing SNOMED CT in our country. Their objective is that in 2027, SNOMED CT will be used as the common national reference terminology in all Belgian patient files. As a result, some professionals do not see the point of training in ORPHAcodes (too demanding in terms of time and effort) when it is not the terminology promoted for use in electronic patient records at the national level.”*

Several countries (France, Germany, Norway, and the Netherlands) have implemented ORPHAcodes in their national health information systems. An overview including the summary of the current state of affairs in the listed countries is found in Annex 1, *Figure 7*.

Comments of note:

#### Austria

*" Since the last reporting, Orpha coding has been officially implemented in the hospital information system in the largest university hospital in Austria. It has been a process which took 18 months from the very first meeting to the first official transmission of OrphaCodes to the MoH and is still ongoing. Most notably, a lot of work had and still has to be done manually by the hospital management, which significantly limits the speed of implementation across the whole hospital; only one department after the other can be included, and the process takes several months for each department. "*

#### Finland

*" all Finnish university hospitals have started to use ORPHAcodes, ORPHAcodes have been implemented in the national Care Registry of THL, allowing hospitals to send data on ORPHAcodes from the electronic patient report systems to the national registry similarly to what is done for ICD-10 codes, increasing knowledge of ORPHA codes through the national expert group and network of RD. "*

#### Germany

*" Since April 1st 2023 it is legally mandatory for hospitals in Germany to use ORPHAcodes in case of a rare disease using the Alpha-ID-SE file as far as primary or secondary diagnoses are concerned."*

## Sweden

*“ The healthcare system is divided regionally, and the implementation of ORPHAcodes needs to be done in each region separately, if no other solution can be found that enables a simultaneous implementation process.”*

### Rundown on RD coding implementation:

Many factors ranging from the standpoint of national authorities to the time required to do the coding affects the attitude towards RD coding. In addition to the perception of the implementation the organizational structure of healthcare resources as well as their IT infrastructure may constitute obstacles to overcome for a successful implementation. However, progression has been achieved during the first year of OD4RD2 and additional activities are planned based on the lessons learned and reported from the national hubs.



## Discussion and Conclusion

The participating national hubs have undertaken a wide range of measures to achieve the WP4 goals. To establish a path adapted to the current state of play in each country, national hubs have compiled National Action Plans (deliverable D4.2) containing their planned activities. The national hubs have continuously adapted their work to current circumstances and evolved the content of trainings and availability of the national helpdesk. Some successful measures included restricting the time used in trainings and optimizing the content to the target audience, confirming the findings from the previous report. The ERN survey mentioned in the previous report, *Deliverable 4.3 OD4RD Lessons learned, March 2023* has been carried out and contributed valuable information both to the national and coordinating hubs.

Several activities including meetings have been performed to engage professional representatives from authorities and health care providers as well as patient organizations. Several national hubs are cooperating with national RD registries to further advance the use of ORPHAcodes for RD patients.

National helpdesks have been established and are in active use receiving questions from a broad range of professionals.

The process of implementing ORPHAcodes is complex and affected by many factors including the structure of the health care system both regarding organization, reimbursement, and infrastructure. Additional complexity is added by the need for alignment and simultaneous use of other coding systems.

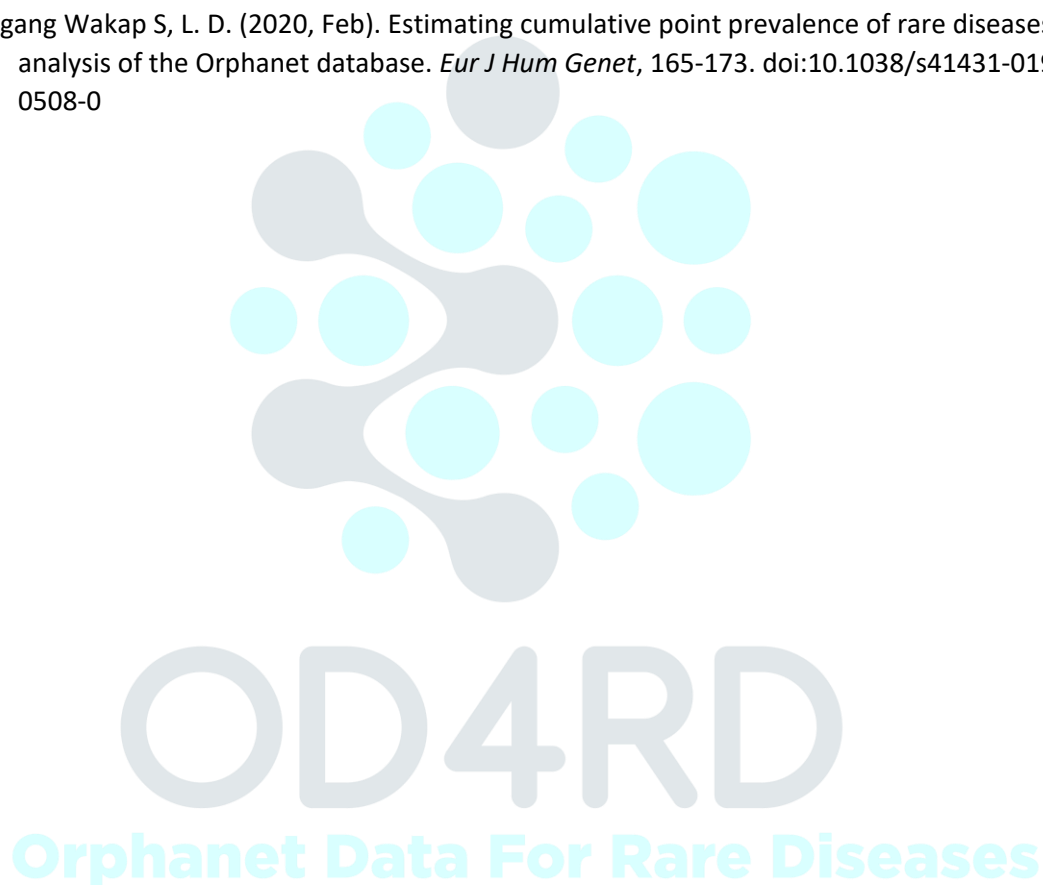
The lessons learned provide valuable insight in the obstacles ahead as well as successful measures to overcome them. The lessons learned since the previous report demonstrates clearly that progress has been made by the national hubs in implementing helpdesks, adapting, and performing trainings as well as identifying new paths forward.









## References

- Chiu ATG, C. C. (2018, Aug 28). Healthcare burden of rare diseases in Hong Kong – adopting ORPHAcodes in ICD-10 based healthcare administrative datasets. *Orphanet J Rare Dis*, 147. doi:10.1186/s13023-018-0892-5
- Gunne E, M. C. (2020, Nov 4). A retrospective review of the contribution of rare diseases to paediatric mortality in Ireland. *Orphanet J Rare Dis*, 311. doi:10.1186/s13023-020-01574-7
- Mazzucato M, P. L.-C. (2023, Sep 4). ORPHAcodes use for the coding of rare diseases: comparison of the accuracy and cross country comparability. *Orphanet J Rare Dis*, 267. doi:10.1186/s13023-023-02864-6
- Nguengang Wakap S, L. D. (2020, Feb). Estimating cumulative point prevalence of rare diseases: analysis of the Orphanet database. *Eur J Hum Genet*, 165-173. doi:10.1038/s41431-019-0508-0







## Annex 1: Existing use cases of ORPHAcodes Implementation (RD diagnosis coding, Use cases and Exploitation)

**Table 1. RD diagnosis coding**





Country	Where	Inpatient/Outpatient	Registration of diagnosis	Who codes	Coding diagnosis: file used	Number of OC available	Visibility of the OC or RD diagnosis in the EHR (further encounter)
	Mandatory for ALL RD centres in Hospitals	Both	Tab RD available in the EHR and daily transmission to intermediate system (BAMARA) (after anonymization) which feeds specific registries and the National RD registry (BNDMR) and other data repository and eprescription.	Clinicians/ARC from expert centres (with specific funding to increase coding capacity) type a diagnosis and the OC is automatically retrieved.	List of diagnosis names linked to OC/ Nom Pack/ FLAT no classification).	As per Nom Pack	Yes the code follows the patient
	Mandatory for ALL Hospitals	Inpatient	Clinicians provide a diagnosis	Clinicians register the diagnosis and then Coders or Clinicians assign a code	Alpha-ID-SE file as basis for coding tools of the hospital software manufacturers. The ORPHAcodes are aligned to ICD10-GM by the Orphanet DE/BfArM experts	7,022 If no ICD10 term => no OC	Yes (if EHR exists, not mandatory yet)
	ALL Hospitals using the Diagnosis Thesaurus (DT)	Both	Diagnosis Thesaurus (DT) is used to register diagnosis in EHR. The EHR feeds the DHD ORPHA-viewer.	Clinicians register the diagnosis and the linked ORPHAcodes is automatically retrieved.	Mapping file aligns the Diagnosis Thesaurus (DT - originally based on a subset of SNOMED-CT) with SNOMED-CT and ORPHAcodes.	Diagnosis Thesaurus (DT) currently contains 5,500 diagnoses with a linked ORPHAcodes	Specific field for the RD thesaurus name (field for OC in development).
	All hospitals in one of 4 health regions (covering approx. Half of NO inhabitants)	Both	EHR and feeds the National registry (manually)	Clinicians in expert centres (specialized health care service) and then the code follows the patient	Clinicians enter the OC in dedicated RD tab of the EHR (from ORPHAcodes API and Orphadata API (classifications and associated genes)	As per Nom Pack	An icon appears next to the patient name whenever an OC has been attributed

**Table 2 Additional Info/ use cases**

Country	Diagnosis status options available	Additional descriptors	Inactivated codes	Undiagnosed code	Group codes allowed	Non Chronic RD history shown?
	Ongoing, Probable, confirmed, undetermined	ICD10, HPO, Genes HGNC, Atypical signs, OC (groups allowed)	Removed or referred to with each new issue. Not retroactively on already registered diagnosis, a QC is carried out whenever data is exploited at the registry level to remove all the inactivated codes.	Available	Yes for "ongoing" diagnosis AND in the Additional information box	No
	Not available	Not available	Removed from the file upon Annual Release of Nom Pack (Differential File)	Available	Yes some are present in the file	No
	Not available: Doctors register (working) diagnosis and should adjust when more information is collected during the process.	Thesaurus-ID, SNOMED and ICD-10 codes	Because the clinicians register with diagnosis thesaurus, this ID stays the same and the code linked to it is updated automatically with each new pack	Not available	Yes	Yes, in medical history
	Not available. OC inserted ONLY when all investigations have been carried out = definitive diagnosis.	ICD-10	When accessing the patient file, the clinician is notified and requested to update the OC	Available	Yes. However, when a group code is chosen, a warning notification pops up, recommending using a code at disorder or subtype level for confirmed diagnosis	Yes: dedicated box indicates Diseases & RD that are cured

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**Table 3. Data Exploitation**

Country	Exploitation tool	OC File used for exploitation	Quality Control of registered data	Numbers, reports, analysis & links reference documents available
	Anonymized data in the National RD registry system n (BNDMR/pyramig). Pyramig allows to provide statistics by NRN centre. They exploit the xml files including the classifications RD Can be linked to other repository i.e système national de données de santé (SNDS), for socio-economical studies	Nom Pack including classifications	Yes by the National RD Registry_BNDMR staff. Liaise with clinicians if needed (coherent code, inactivations....)	1,372 M patient registered in the National RD Registry BNDMR & several publications and analysis <a href="https://www.bndmr.fr/publications/nombre-de-cas-par-mr/">https://www.bndmr.fr/publications/nombre-de-cas-par-mr/</a>
	Alpha-ID-SE file, ORPHAcodes based on Orphanet nomenclature pack	Alpha-ID-SE file, ORPHAcodes based on partial Orphanet nomenclature pack Flat file	No	Not available
	ORPHA-viewer: it exploits data registered in the EHR. Future developments: the ability to use the tool for research purposes, policy making, data exchange with ERNs and the national designation of expert centres.	The tool Exploits the ORPHAcodes API and can aggregate data and exploit the classification.	No	Not yet available
	RD REGISTRY	Nom Pack (Flat file without classifications. AggregationLevel is included)	No	3,900 patients registered in the RD Registry (as of June 2024). Annual report for 2022 available in Norwegian <a href="arsrapport-sjeldenregisteret-2022-endelig.pdf">arsrapport-sjeldenregisteret-2022-endelig.pdf</a> ( <a href="https://oslo-universitetssykehus.no">oslo-universitetssykehus.no</a> )

