

# PHEMS: validating novel federated ecosystems for analytics and synthetic data generation methods through real-world data investigations, particularly in the context of pediatric healthcare

## New strategies in Health Data Sharing – Clinical Use Cases

*Pediatric Hospitals as European drivers for multi-party computation and synthetic data generation capabilities across clinical specialties and data types (PHEMS, an EU-funded project) aims to establish an open and decentralized health data ecosystem for accessing health data across multiple European hospitals. Data federation (federated analytics and learning) will be applied to overcome significant obstacles in cross-border collaboration while complying with the European Union's General Data Protection Regulations (GDPR) and AI Act. Additionally, PHEMS will develop an innovative data synthesis and anonymization pipeline for use in the federated ecosystem for rare disease research.*

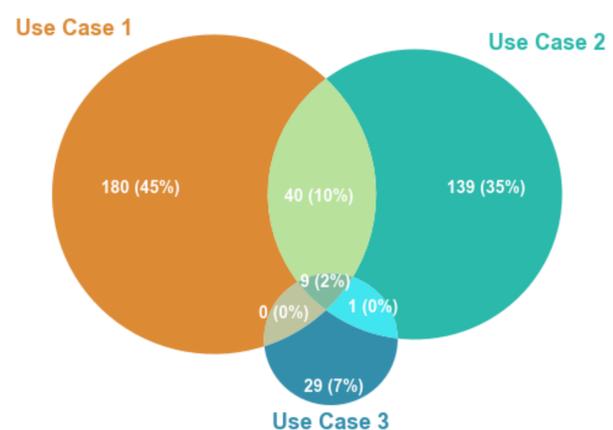
### Variable categories

The variables of interest for each use case are further grouped into categories.



### Variable overlap

An overview of the number of variables to be collected for each use case and their overlap.



### 1 Cardiology operations benchmarking

Supporting **creation of benchmarking standard** and **promote a culture of benchmarking** across pediatric cardiac institutions, enabling the **adoption of 'best-practice' across institutions**

Led by Great Ormond Street Hospital for Children (GOSH)

### 2 Pediatric Intensive Care Unit Sepsis

Investigating the benefits of the federated ecosystem to **develop, train and test algorithms to predict sepsis** on a large scale between pediatric intensive care units in four large European children's hospitals

Led by Sant Joan de Déu Barcelona Children's Hospital (HSJD)

### 3 Hematology - hemophilia

**Developing and testing a machine learning-based prediction algorithm** to improve treatment for pediatric patients with **hemophilia A or B**

Led by Erasmus University Medical Centre Rotterdam (Erasmus)

At the current state of the project, the achievement worth mentioning is the curation of the variables essential to the use case studies. This preliminary work, in the first months of the consortium, lays the foundation for the OMOP data standardization at the hospitals and the synthetic data generation.



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