Enabling Personalized Interventions
EPI will find a solution for distributed data in healthcare to support patients and providers

01  Empower patients and providers by medical and lifestyle interventions

02  Support patients and providers by taking personalized decisions

03  Advice based on data from various sources
Developments in data use are lagging behind in the healthcare industry. Data is not accessible and remains in silos. Data is not analyzed to derive meaningful clinical insights. Derived insights are not accessible for performing self-management. Healthcare is lagging behind because it is difficult to make data available for analysis.
EPI brings research institutions, healthcare providers and the private sector together
Solutions to use data in healthcare are developed and translated into practice

Challenges of use cases in practice

1. Complete overview of data is missing
2. Data consensus differs between institutions and countries
3. Sharing of data is not allowed

Conceptual solutions

- Develop machine learning methods and health decision support algorithms
- Link multiple disparate health and lifestyle datasets
- Focus on a secure and trustworthy distributed data infrastructure
Use case 1: A complete overview of data of CVA patients is missing

ISSUE
• Patient data is spread over institutions
• A complete overview of the patient data is missing, which makes prediction of outcomes (survival, functional status, quality of life) difficult

AIM
• Understand how prediction can support shared decision-making and self-management and result in better health outcomes
• Set up a prediction model for individual patients to inform them on their outcomes
• The tool will be used in shared decision making

METHOD
• Using incomplete data to predict outcomes
Use case 2: Data consensus differs between institutions and countries of DIPG patients

ISSUE

- Number of Diffuse Intrinsic Pontine Glioma (DIPG) patients is small
- Patients are spread across different countries with different data consensus
- Which makes it difficult to get results on treatment effects

AIM

- Integrate different data platforms into one communicating data infrastructure
- Find patterns in data that predict (length of) survival and QoL of DIPG patients
- Create self-learning algorithms that will improve predictive capacities of the DIPG survival prediction model

METHOD

- Use advanced prediction methods and overcome legal issues such as working with consent
Use case 3: Data of psychiatry patients has to stay in its hub complicating integral research

ISSUE
- There is a huge variability between patients in trials.
- Adjust patients to the right medication takes too long
- In daily practice, the variation between patients is even bigger because of strong selection bias in most clinical trials, because data can not be shared

AIM
- Support in decision making about medication and adjustment to medication, which accelerates the process
- Confidence in medication treatment and adherence is increased
- Duration of treatment and suffering are decreased

METHOD
- Developing an algorithm to predict best treatment, while not sharing data, only algorithms and expertise
Research is focused on designing, distributing and saving adaptive data in a secure infrastructure.

**Analytics interventions**
Develop models that can predict the effectiveness of interventions.

**Data infrastructure**
Design an architecture for the data from different sources.

**Regulatory constraints and data governance**
Automating the process of data sharing with different legal constraints.

**Distribution of Data & Algorithm**
Making accurate predictions while preserving privacy constraints of remote data sources.

**Adaptive health diagnosis**
The models should be able to keep learning from new data and treatments.
The outcome of the EPI project is a digital health twin for self-/joint management

A methodology to create digital health twin
- All data will be collected of a patient
- Inform health decisions and avoiding unnecessary treatment
  Empower self/joint management of disease

Preconditions creating digital health twin
- Able to perform with data gathered from different sources
- Deal with the variability, ownership, data protection and privacy issues
To stay informed of the developments of the EPI project please join our LinkedIn group

EPI LinkedIn group: Enabling Personalized Interventions (EPI)

For more information please contact:
Marloes Bons
bons.marloes@kpmg.nl
+31 6 23593759