Big Data for Medical Analytics

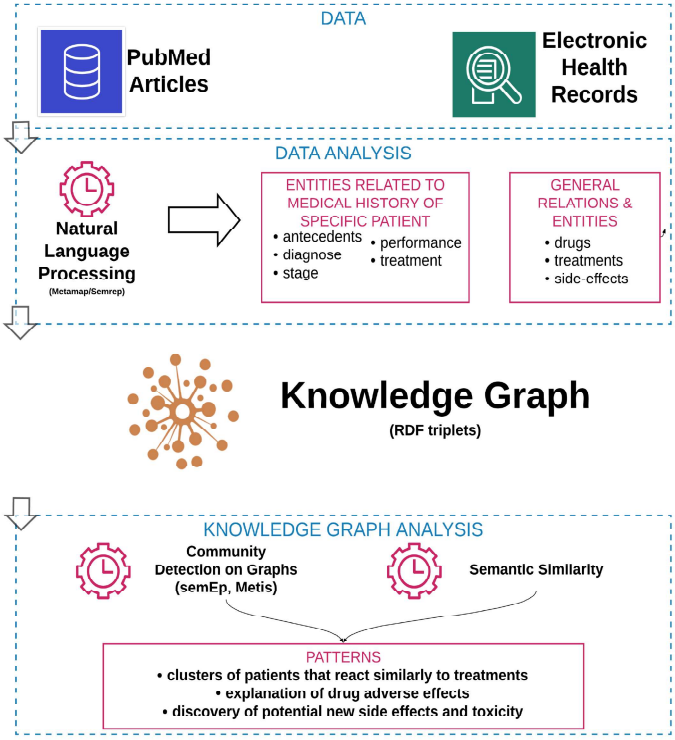
BIG Medilytics

Oncology

Lung cancer

Lung Cancer Pilot: aims to exploit knowledge from Big data to improve the healthcare continuum of lung cancer patients at all the stages, i.e., prevention, diagnostics, treatment, follow-up, including the last period of life. The pilot also aims at strengthening the sustainability of healthcare systems by reducing costs while improving quality and access to care in lung cancer.

The Lung Cancer Pilot



Mechanics:

The pilot starts with medical data from the Electronic Health Records and Scientific Literature, performs pattern extraction and ends up in a **knowledge graph (KG)** that captures essential correlations in Lung Cancer treatment. The knowledge graph integrates the extracted knowledge and represents background knowledge for predicting treatment effectiveness, toxicity, and survival time.

Big Data Methods in Lung Cancer:

Machine learning (ML) to extract information from:

- Unstructured & structured data sources
- Open data sources (e.g. PubMed) & Electronic Health Records
- Integrate extracted knowledge into a KG
- ML on top of the KG uncovers patterns that explain treatment effectiveness and disease progression

Results:

- Identify whether there is **evidence before diagnosis** that may lead physicians to **clinical suspicion** of **lung cancer**
- **Reduce** the number of **visits** to the **Emergency Room** by early detection or treatment of possible symptoms or secondary effects
- **Reduce** the **toxicities** associated to patients with comorbidities in order to adapt the treatments to be applied

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