COMFORT Project to Improve Diagnosis and Treatment of Urologic Cancers with Artificial Intelligence-Driven Decision Support Tool

New interdisciplinary research endeavour sets out to improve the health and well-being of people affected by prostate and kidney cancer

5 April 2023 – Prostate cancer (PCa) and kidney cancer (KC) are among the most prevalent cancers. Europe sees some of the highest incidence rates of KC for both men and women in the world, while PCa accounted for approximately 23 % of all new cancer cases diagnosed in men across European Union countries in 2020. These cancers have a significant impact on the health and quality of life of those affected and place an increasing burden on our healthcare system, with costs exceeding EUR 12 billion each year.

Modern medicine generates a tremendous amount of structured and unstructured data (such as electronic health records, biomarkers, and complex medical imaging) that surpasses human analytical abilities, resulting in inaccurate diagnoses and ineffective treatments. Efficiently leveraging health data can reduce these burdens, but current clinical methods fall short in utilising the wealth of available data.

To address these challenges, the newly launched COMFORT research project is developing a cutting-edge decision support system. The innovative tool will use artificial intelligence (AI) and data-driven insights to assist medical professionals in delivering improved care for people affected by PCa or KC. The project, led by Charité, begins activities in April 2023 and will run for four years. It will receive EUR 5.9 million in funding from the European Union's Horizon Europe programme.

Unlocking the Full Potential of Data-Based Solutions in the Fight Against Urologic Cancer

"Our ultimate goal is to leverage the potential of new machine learning and eHealth tools for a healthy society. In line with Europe's Beating Cancer Plan, COMFORT will take significant steps forward in the fight against kidney and prostate cancer," states project lead PD Dr Keno Bressem from Charité, Germany.

The four-year project is divided into three stages: data collection and preparation, development of trustworthy AI models, and deployment in a real-world clinical setting.

COMFORT strives to develop transparent and accurate computational models by integrating complex health data from multiple sources. These models will use advanced AI-driven risk stratification methods to predict, prioritise, and prevent disease progression to guide healthcare professionals in prioritising the best therapies for patients.

Multidisciplinary Consortium Enabling Trusted AI-Empowered Healthcare Solutions

Furthermore, COMFORT will provide insights into why AI models are trusted and what triggers mistrust. To this end, researchers will investigate how model outputs are perceived differently by physicians, patients, and computer scientists. Ultimately, the project will produce the first multi-national evaluation of AI models in a clinical setting and offer new insights to maximise the usefulness and acceptance of the technology.

To achieve these ambitious goals, the COMFORT consortium bundles expertise from radiologists, urologists, oncologists, deep learning experts, software developers, and data science experts from some of the leading research centres, universities, national health services, patient organisations, and relevant SMEs in seven European countries.

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Key Facts
Full Name*:* COMFORT – COMputational Models FOR patienT stratification in urologic cancers – Creating robust and trustworthy multimodal AI for health care
Start Date: 1 April 2023
Duration*:* 48 months
Budget*:* EUR 5.9 Mio.
Coordinator: Charité
Website: https://www.comfort-ai.eu

Project Partners
Belgium
- European Cancer Patient Coalition

Germany
- Berliner Hochschule für Technik
- Charité – Universitätsmedizin Berlin
- Eurice – European Research and Project Office GmbH
- Fraunhofer Institute for Digital Medicine MEVIS
- Phönix-PACS GmbH
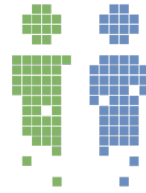- University Hospital rechts der Isar

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Spain
- Servicio Madrileño de Salud
  - Foundation for Biomedical Research of the Hospital Universitario 12 de Octubre (affiliated entity)

Sweden
- Umeå University

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