EU Awards 12 million Euros to Supercompute a Healthier Future for Europe's Children

To help fight childhood obesity and other child diseases, the European Commission has awarded 12 million euros to a medical research project that will use mathematical models to improve the treatment of children.

According to recent data from the World Health Organisation (WHO), the number of overweight infants and children in Europe has steadily risen from 1990 to 2008. Childhood obesity is strongly linked to risk factors for cardiovascular disease, type 2 diabetes, orthopaedic problems, mental disorders, underachievement in school and lower self-esteem.

To tackle this problem, the European Commission has decided to fund the MD-Paedigree project. This project will provide decision support to medical professionals when treating their young patients in four areas: cardiomyopathies, obesity-related cardiovascular disease, juvenile idiopathic arthritis and neurological & neuromuscular diseases.

Disease simulation to predict treatment outcome

Through disease simulations, requiring the availability of high performance and supercomputer resources, MD-Paedigree will improve the diagnostic precision of paediatricians and offer child-specific treatment choices for Europe's children. Using MD-Paedigree, doctors will be able to select a highly individualised treatment options and receive on-the-spot support in predicting the likely outcome of such treatments based on each patient's personal medical data. This will lead us into a future where child healthcare will become more effective, more personalised, and even more affordable.

Minimalise animal testing

On top of that, there are strong ethical reasons to pursue this revolutionary research: in the future, new drugs and procedures will be preliminarily tested using computer simulations. In line with this vision, MD-Paedigree will open up the prospect of exploring new treatments without or with only minimal animal testing.

In the longer run, it is to be expected that even first pre-clinical and phase one clinical trials may be substantially supported and accelerated, thereby massively reducing the risk to patients involved in such endeavours. Presently, very few new drugs are specifically tested for children – and here MD-Paedigree aims to open up a whole new perspective for paediatric research.

MD-Paedigree, which stands for Model-Driven European Paediatric Digital Repository (www.md-paedigree.eu) is due to last 4 years, finishing in 2017. The project consortium of 21 partners from 10 countries (Belgium, France, Germany, Greece, Italy, Romania, Switzerland, Netherlands, United Kingdom, USA) is coordinated by the Bambino Gesù Hospital in Rome and includes five other clinical centres from across the EU (Amsterdam University Hospital, Catholic University Hospital in Leuven, Giannina Gaslini Institute in Genoa, Great Ormond Street Hospital in London, Wilhelmina Children's Hospital in Utrecht).

The 6 clinical centres are scientifically and technologically supported by Siemens and other industrial partners, research institutions and SMEs.

MD-Paedigree follows two previous highly successful projects, Health-e-Child (www.health-e-child.org) and Sim-e-Child (www.sim-e-child.org) making it possible to apply innovative diagnostic tools to routine clinical data. It is meant to provide three fundamental functionalities on top of those of an advanced Electronic Health Records registry:

1. Similarity search, allowing clinicians to access "patients like mine" (and finding decision support for optimal treatment also based on comparative outcome analysis), and allowing patients to get in touch with "patients exactly like me"
2. Model-based patient-specific simulation and prediction
3. Patient-specific clinical workflows.

Through these tools, MD-Paedigree cognitively updates the European ideal of granting universal access to clinical and patient enhanced awareness of evidence based best treatment.

For more information, please visit: MD-Paedigree

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