Press release
Prague, 24. 11. 2022

Using digitization and artificial intelligence to improve healthcare

The implementation of the European project "RES-Q+ Comprehensive solution for improving health care using a global register of stroke care quality" will be carried out by a consortium of 21 top European institutions. The project will be coordinated by the Institute of Health Information and Statistics of the Czech Republic (IHIS). The head of the project is a researcher and neurologist Robert Mikulik from the Czech Republic, and the Co-leader is Hendrik Knoche, a human-computer interaction expert from Aalborg University, Denmark. The team will deploy artificial intelligence in the fight against stroke in Europe, with the aim of making the knowledge of top specialists available to both stroke patients and general practitioners.

The goal of the RES-Q+ project is to improve the quality of care for stroke patients, save patients' lives and reduce healthcare costs. This will be achieved by:

- creating a fully automated tool for obtaining and processing data on the provided health care;
- evaluating data and providing feedback to care providers through artificial intelligence-based virtual assistants that precisely target problem areas,
- creating virtual assistants for stroke patients that will monitor their condition.

Taking these steps will improve the quality of care for patients with stroke in Europe. The artificial intelligence system will thus help save the lives of many patients and reduce healthcare costs. On top of that, it will increase the economic and social benefit of cured patients.

For the reasons mentioned above, the RES-Q+ project is considered the beginning of a revolution in healthcare, which will lead to the automation of a number of processes using information technology (IT). The project platform has the potential to be used for other diseases in the future. A consortium of 21 partners, including the top European institutions in the relevant fields, will participate and cooperate in the project. These are hospitals from Eastern, Western and Southern Europe, universities, IT companies, law firms, the World Stroke Organization, Stroke Alliance for Europe, which involves many patients' organizations across the Europe, and ANGELS Initiative supporting stroke providers to improve stroke care worldwide (see Appendix 2). The consortium is led by the Institute of Health Information and Statistics of the Czech Republic.

To implement the project, the consortium was granted a subsidy of 8 million euros. Funding will be drawn for four years until October 2026 from HORIZON EUROPE – European Commission's research and innovation support program. The project called "RES-Q+ Comprehensive solution for improving health care using the global quality registry of stroke care" was ranked second out of 47 project proposals in the expert evaluation and was described as unprecedented.

What will the RES-Q+ project bring

The RES-Q+ project will build on RES-Q (Registry of Stroke Care Quality) – a global and academic platform designed to improve the quality of care of stroke patients. It is the largest stroke care quality registry in the world to date. The registry was developed in 2017 under the auspices of the European Stroke Organisation in cooperation with the ANGELS Initiative. Today, more than 2,000 hospitals from all over the world are actively included in it. The goal of the original RES-Q registry was to provide evidence of the quality of stroke care in individual countries. The data that hospitals provide to the register is important not only for the hospitals themselves, but also, for example, for the Ministries of Health, which can use the information to make decisions about new investments in health care or changes in its organization. RES-Q Registry analyses this data from different countries and provides feedback to all contributing members indicating in which parameters the care needs to be improved in the given hospital or country.

"The RES-Q+ project will bring several new products that will make the doctors´ work easier, improve acute stroke care and also improve the lives of patients after stroke," enumerates the benefits of the project the PI Robert Mikulik. "Now, doctors or nurses enter data about the care provided into the system manually, and it costs time. The project will offer a solution where data will be loaded automatically from hospital systems into the registry, without any manual work. The virtual assistant would then analyse the data and tell the doctor, nurse or even the hospital director in which parameters the care needs to be improved," adds Mikulik.

Another result of the project will be a virtual assistant for patients after stroke, which, based on a mobile application controlled by voice or touch, will help monitor the patients' condition after their discharge from the hospital. Data about their patient's health condition will be available to the doctor online, which will allow the check-ups to be more effective. Patients will also receive information that will help them in treatment, or a referral to a specialist according to their specific problems.

For scientific purposes, information about the patient's current condition will be paired with data obtained during the course of their treatment at the time of hospitalization, with the aim of evaluating and identifying possible new connections between the quality of care and its consequences. So, the predictive models, e. g. models that predict a patient's prognosis, will be developed as another output of the project.

The RES-Q+ project creates a European open space for data sharing about the stroke patients' care, both legally and technically. The establishment of a legislative framework for the EU and the development of a communication interface for the connection of other healthcare systems is planned.

A legal environment will be created allowing this technical platform to share data on the health status of stroke patients, usable not only for scientific purposes, but also for doctors in clinical practice and for the patients themselves. The information about their current health status would be available within the whole Europe. The project will also contribute to the unification of hospitalization information and the creation of one standardized discharge report format in the EU in the field of stroke care.

Annex 1

- In general, RES-Q+ (with all new features) is expected to directly impact healthcare in around half of the European countries.
- One of the most significant impacts of the RES-Q+ project will be the improvement of the quality of care for the aging population. Currently, the RES-Q data source register monitors the quality of health care in 2,000 hospitals from 91 countries around the world.
- Based on the current growth rate, we assume that RES-Q+ will cover more than 1,200 (or 1,900) active hospitals in Europe alone by 2025 (or 2030). This should translate into the annual provision of quality monitoring for more than 142,000 (or 220,000) patients.
- Direct monitoring of patients through a virtual assistant will lead to the collection of data and information related to the life of stroke patients that are not normally captured by routine clinical practice (e. g. conditions such as depression, spasticity, anxiety, fatigue, sexual dysfunction, etc.) Predictive models developed in the RES-Q+ project will be able to predict various anomalies. Diagnostic models will be available for medical use worldwide, by any user of the RES-Q+ system, i. e. in 100 countries by 2028.
- RES-Q+ will be an open platform designed to monitor the quality of care in other fields of medicine as well. Primarily in fields that are closely related to stroke, such as rehabilitation, but it can also be used in vascular surgery, neurosurgery and other fields.

Annex 2

RES-Q+ partners

Institute of Health Information and Statistics of the Czech Republic
Aalborg University, Czechia
Charles University, Czechia
Technical University Dublin, Ireland
ALANA, Ireland
Ontotext, Bulgaria
University of Murcia, Spain
Timelex, Belgium
CHINO.IO, Italy
Masaryk University, Czechia
Vall d'Hebron Institute of Research, Spain
Angels Initiative, Germany
World Stroke Organisation, Switzerland
Stroke Alliance for Europe, Belgium
National and Kapodistrian University of Athens, Greece
Institute of Psychiatry and Neurology, Poland
University Hospital of Bucharest, Romania
Multiprofile Hospital for Active Treatment in Neurology and Psychiatry, Bulgaria
RES-Q Global Institute, Czechia
University of Glasgow, United Kingdom
International Clinical Research Center at St. Anne's University Hospital Brno, Czechia