**Press Release – August 12, 2025**

**The TRUSTroke project, coordinated by Vall d'Hebron, launches a clinical study to develop an AI-based solution for the follow-up of stroke patients**

* **A retrospective study has been carried out with data from 11,000 patients to train artificial intelligence algorithms and adapt the Nora mobile application to different patient profiles**
* **A clinical study of 1,500 patients is underway, aiming to further train the new version of the AI models and analyse its usefulness, ease of use and ability to improve clinical follow-up**
* **TRUSTroke’s solution is designed to predict stroke recovery and evolution, anticipate risks and empower patients to participate in decisions about their health**

The European Research Project [TRUSTroke](https://trustroke.eu/), led by the [Vall d'Hebron Research Institute (VHIR)](https://vhir.vallhebron.com/en), is progressing in the creation of a digital solution based on artificial intelligence (AI) to make a personalised follow-up of patients who have suffered an ischemic stroke. In the first two years since its launch, the project has completed an initial study using retrospective data to train AI algorithms in combination with in-depth surveys to understand the needs of patients and professionals to create a more personalised solution. Recently, it has moved to the next phase of the clinical study, which will test its usefulness in predicting the evolution of patients after stroke in the short- and long term.

TRUSTroke leverages [Nora](https://www.nora.bio/), a comprehensive mobile and web platform developed at VHIR six years ago. Designed to ensure consistent follow-up of stroke patients, Nora enables healthcare professionals to track recovery in real time while improving the collection of real-world data to accurately evaluate patient outcomes. This data is crucial for testing and validating the AI algorithms developed within the TRUSTroke project. Now, thanks to this project funded by the Horizon Europe programme, work is underway to incorporate AI algorithms into a solution that allows for even more personalised monitoring and predictions on the progression of the disease. **“Our goal is to predict possible complications, anticipate the risk of recurrence and help professionals and patients to make more accurate decisions”***,* says Dr. Carlos Molina, head of the Stroke Unit at Vall d'Hebron University Hospital and of the Stroke Research Group at VHIR, and coordinator of the project.

**A personalised and trustworthy technology**

One of the first project milestones was to understand the needs and interests of stroke patients to adapt Nora. The Barcelona-based strategic design agency [Nacar Design](https://nacardesign.com/), in collaboration with healthcare professionals, patients and caregivers, identified different user profiles based on levels of treatment engagement and skills in technologies. **“Knowing the different user profiles allows us to design a solution that adapts to their needs and preferences in a more personalised way, with the aim of reaching everyone”**, explains Carmo Requejo, Experience Design Manager at Nacar Design.

On the patient side, the project is working with the [Stroke Alliance For Europe (SAFE),](https://www.safestroke.eu/) a non-profit umbrella organisation that represents stroke patient support organisations from all over Europe, to consider the patient's vision throughout the research process.

In this first phase, a retrospective study was carried out with clinical data from more than 11,000 stroke patients from three European hospitals: [Vall d'Hebron University Hospital](http://hospital.vallhebron.com/) (Barcelona, Spain), [UZ Leuven Hospital](https://www.uzleuven.be/) (Leuven, Belgium), and the [Fondazione Policlinico Universitario A. Gemelli IRCCS](https://www.policlinicogemelli.it/) (Rome, Italy). In addition, The [Jozef Stefan Institute](https://www.ijs.si/ijsw) (Ljubljana, Slovenia) has worked to harmonise the data from each hospital, so that the information is organised in a uniform manner regardless of where it comes from, and “speaks the same language” for the algorithm to understand. Once structured, these data have been used to train artificial intelligence algorithms, a task led by [Eurecat](https://eurecat.org/home/es/), the main technological center of Catalonia and one of the largest private research organisations in Southern Europe.

TRUSTroke stands out for its use of a federated learning, a technology that enables the training of artificial intelligence algorithms in a reliable environment that guarantees the security and privacy of patients' personal data. With this solution, each hospital preserves the pseudonymized and harmonized clinical data of patients who have given their consent in a local server, in a secure and encrypted manner. This local information is used to preliminary train an AI model within the hospital itself.

Once this local training is done, only the model parameters (not the original patient data) are sent to CERN, the European Organization for Nuclear Research, where they are combined with results from other centres to produce a refined global AI model collaboratively. After several rounds, the global AI model obtained is returned to each participating centre so that it can be applied locally. Federated AI models like this are more accurate because they are able to improve generalisation by leveraging more data from three clinical centers.

[CERN](https://home.cern/), recognised worldwide for its expertise in advanced technologies and management of large volumes of data, coordinates the technical infrastructure needed to run its federated platform (CAFEIN™). This process is managed in collaboration with the [Politecnico di Milano](https://www.polimi.it/) (Italy) and the [Consiglio Nazionale delle Ricerche](https://www.cnr.it/) (Italy).

**The start of a clinical study to test the AI solution and anticipate risks**

With the algorithms trained, TRUSTroke is now launching a clinical study that plans to incorporate new data from 1,500 patients with ischaemic stroke from the three participating hospitals to enhance training and further improve the algorithms. The aim is also to test the solution with the improved version of Nora. The usability of the application, its navigation and its usefulness in improving patient follow-up will be studied.

The aim of TRUSTroke will be to enhance recovery and predict the risk of a new hospitalisation or stroke recurrence. It will also help to calculate the severity of a stroke in the first 24 hours. **“This information helps to improve follow-up and empower patients and their caregivers and to improve shared decision-making with professionals”**, says Pietro Caliandro, a neurologist at the Fondazione Gemelli, which is leading the clinical study.

Soon, TRUSTroke will be evaluated at the [Ljubljana University](https://www.uni-lj.si/en) (Slovenia), a hospital that has not participated in the training of AI algorithms, to see if the solution also works well in new and real environments.

In addition, under the leadership of [EATRIS](http://eatris.eu/), this project will deliver a roadmap for future regulatory approval as well as a plan for the long-term sustainability and exploitation of the AI-based solutions.

**A project involving a dozen European institutions**

On 26 June, project members met in Leuven to discuss progress, align with the strategy and plan the next steps of their mission.

TRUSTroke is a project led by VHIR, with the participation of the Hospital Policlinico Universitario Agostino Gemelli, the Katholieke Universiteit Leuven, the Univerza V Ljubljani, the CERN, the Politecnico di Milano, the Consiglio Nazionale delle Ricerche, l'Institut Josef Stefan, Eurecat, Nacar Design, Nora Health, EATRIS and the Stroke Alliance for Europe (SAFE).

**Artificial intelligence in stroke: one of the focus of VHIR's research**

The Stroke Research Group at VHIR is promoting several innovative projects that apply AI to transform stroke care. TRUSTroke is building the basis of another European project, [Umbrella](https://umbrella-ihi.eu/), also coordinated by VHIR and led by Dr. Carlos Molina which addresses all types of stroke (ischaemic, haemorrhagic and transient ischaemic stroke), and will develop predictive models and personalised treatment, all integrating digital solutions to improve comprehensive patient care. Umbrella has more than 20 partners and a budget of 27 million euros to achieve its objectives.

In parallel, the team is also participating in the [VALIDATE](https://validate-project.eu/) project, with Dr. Marta Rubiera, neurologist at the Stroke Unit of the Vall d’Hebron University Hospital and principal investigator at the Stroke Research group at VHIR, leading the clinical study, which aims to develop a real-time prognostic prediction model for patients with acute ischaemic stroke. This tool will be validated by comparing the predictions with the patients' functional status three months later.

These projects position the VHIR as a European benchmark in the use of AI to improve stroke prevention, diagnosis and treatment.

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