

## CogWatch

### Developing rehabilitation tools for stroke survivors with mental difficulties



Stroke is recognized as the leading cause of disability in industrialised countries, but in addition to physical problems, a significant proportion of stroke survivors will also have some kind of mental impairment.

These impairments can be very diverse and will depend on which area of the brain was affected during stroke. They can include problems with language, memory, problem solving, or carrying out complex movements.

A recent study in the UK found that 68% of stroke patients showed characteristics of a particular mental impairment called 'Apraxia and Action Dissociation Syndrome' (AADS). These patients are unable to perform the **ordered sequences of movements** that are necessary to complete everyday tasks such as making a cup of tea or brushing their teeth, even when they have no difficulties with motor movements. Mental impairments such as these can have significant effects on recovery after stroke and can make it very difficult for patients to live independently in their own homes.

The European Commission has just committed over €4 million to fund **CogWatch**, a new collaborative project between university and industry partners that focuses on stroke patients with AADS. The group, which is coordinated by the University of Birmingham, UK, will conduct research into the specific problems faced by AADS patients and then develop new technologies to assist them in their daily lives.



The **CogWatch** partners are developing intelligent everyday objects such as cutlery, a kettle, a toothbrush and a vest which will sense the way the objects are being used and wirelessly transmit the information back to a central healthcare system. The objects contain sensors to monitor orientation, motion and grip strength that, when used in combination, will provide the system with a detailed description of how the objects are being used by the patient.

Initially, this system will be used with AADS patients in the laboratory to explore the kinds of errors that are made during everyday tasks. The researchers also will identify which types of instructional guidance are the most effective at correcting or preventing errors and will then build this feedback into the final integrated **CogWatch** system.



The goal is to develop a personalized rehabilitation system that can be installed into a patient's home and provide continuous rehabilitation training beyond standard occupational therapy. It will silently monitor the patients as they go about their daily routines and provide helpful and relevant guidance cues when errors are detected.

As an additional feature, the system will securely relay information to the hospital so that the medical team will be kept up to date with the patient's progress.

If **CogWatch** is successful it will enable stroke patients with AADS to overcome the mental challenges that impair their daily lives and therefore improve their quality of life in the long term.

The three year project began in December 2011 and involves partners from the UK, Germany and Spain including The Stroke Association UK.

*If you want any more information, please contact Clare Walton at [ClareWalton@safestroke.com](mailto:ClareWalton@safestroke.com).*