



## Continuous EEG Measurements Offer Better Outcome Prediction of Postanoxic Coma



Research from the University of Twente (MIRA) in cooperation with Rijnstate hospital and Medisch Spectrum Twente reveals that EEG-measurements can better predict the outcome of a coma that was caused by a lack of oxygen to the brain. The research has been published in the journal *Neurology*.

Current methods are based on the clinical measurement of the depth of the coma in combination with SSEP measurement but are accurate only 10 percent of the time. The method of continuous EEG-measurements appears to be more reliable and provides accurate estimates in about 50 percent of patients, according to this research. This is because EEG-measurements focus on the speed with which the brain's activity recovers and recovery over time seems to be a better indicator of the severity of brain damage than single brief measurements.

The research involves data from approximately 300 patients and was carried out from 2011 to 2014. This is the largest dataset ever used for research of EEG in postanoxic coma. During this study, the researchers used continuous EEG measurements as opposed to single EEG measurement and were able to show that the continuous measurement is more accurate as compared to single measurement.

The first 24 hours are critical in patients suffering from postanoxic coma. If sufficient brain improvement is seen within twelve hours, the probability of a good recovery is higher. However, if there is insufficient improvement within 24 hours, the prognosis in most cases is poor. The ability to determine the chances of early recovery at an early stage can provide both doctors and families with better information and can also help clinicians determine whether the continuation of intensive care treatment makes sense.

However, these results trigger some new questions as to whether the poor prospects of a coma-patient justify stopping treatment? Doctors and philosophers at the UT's MIRA research institute will start searching for answers to these and other ethical questions in the middle of this year.

The Twente research on continuous EEG measurements was initiated and set up by Dr. Jeannette Hofmeijer and Prof. dr. ir. Michel van Putten and carried out in cooperation with Tim Beernink (medical doctor at Rijnstate), Dr. Frank Bosch (intensivist Rijnstate), Dr. Albertus Beishuizen (intensivist MST) and Dr. Marleen Tjepkema-Cloostermans (technical medicine UT and MST). The research was partly funded by the Dutch Ministry of Economic Affairs, Agriculture and Innovation, province Overijssel and Gelderland (ViP Brain Networks project). Marleen Tjepkema-Cloostermans obtained her PhD in the subject at the University of Twente in 2014.

Source: University of Twente

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