

Predicting recovery after stroke

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(Medical Xpress) -- In work that may revolutionise rehabilitation for stroke patients, researchers from The University of Auckland and the Auckland District Health Board have shown it is possible to predict an individual's potential for recovery of hand and arm function after a stroke.

The new approach can be used to personalise [rehabilitation](#) so that patients and therapists set realistic goals for [recovery](#). It may also improve outcomes of trials that evaluate new therapies, by identifying patients who are most likely to respond to specific treatments.

“One in six people worldwide will have a [stroke](#) in their lifetime,” says principal investigator Professor Winston Byblow. “After stroke, impairment of the arm and hand is very common and has a major impact on independence and quality of life.

“Until now it has only been possible to group patients together according to their broad similarity to others who have already gone through upper limb rehabilitation, but this information cannot inform an individual patient's rehabilitation plan. We have developed the first clinical algorithm to actually predict the individual patient's potential for recovery based on information gathered before rehabilitation begins.”

The lead author of the study, Dr Cathy Stinear explains: “The algorithm begins with a bedside test within three days of stroke. The test takes only a few minutes and requires no special equipment. This is sufficient to provide a prediction for many patients, but for others an additional test is

required to measure the integrity of neural pathways from the brain to the arm. If this test gives no definitive result, an MRI assessment can be performed to better determine whether the pathways in the stroke-damaged side of the brain remain viable.”

The research team have trialled the process in patients and followed their recovery. “When the tests are combined in our stepwise algorithm they accurately predict each patient’s recovery at 12 weeks, which is around the time that therapy normally ends,” says Dr Stinear.

Neurologist Professor Alan Barber, a member of the research team and Head of the Auckland Hospital Stroke Service, says that the findings are very significant. “This is the first study to predict an individual’s potential for motor recovery using measures obtained from that patient in the initial days after stroke. This information can be used to tailor rehabilitation before it begins.”

The team is now involved in a three-year trial of the algorithm within the hospital. The results will show whether the algorithm leads to improved outcomes for [patients](#) and increases the efficiency of rehabilitation services.

The team’s work was published in the journal *Brain* this week. It was funded by the Health Research Council of New Zealand.

Provided by University of Auckland

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