This brain-reading cap lets locked-in syndrome patients have conversations

Infrared light sees the difference between 'yes' and 'no'

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This is pretty incredible. Patients with locked-in syndrome, who are totally paralysed and unable to speak, have been able to communicate with doctors and family via a brain-reading cap.

The small scale study, of four patients, was carried out at the University of Tübingen in Germany. The cap uses a system called fNIRS (functional near-infrared spectroscopy). Infrared light is used to detect blood flow in the brain and the neuroscientists first used test questions - with obvious 'yes' or 'no' answers - to work out which blood flow signalled 'yes' and which signalled 'no'.

Once the team was satisfied, with a 70% accuracy, for each of the three women and one man in the study, they then began to hold simple conversations with the patient using the brain cap to respond.
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When asked if they were happy with life, all four answered 'yes' and the man told his daughter not to marry her boyfriend by answering 'no' nine times out of ten when posed the question.

The next step for Niels Birbaumer, the lead neuroscientist on the study, is to work on a communication system which uses the brain sensing cap to allow the locked-in wearer to speak proactively.

He cited Jean-Dominique Bauby's blinking method for dictating *The Diving Bell and the Butterfly* as inspiration. Bauby was able to move his eyelid but the cap could, in future, allow completely paralysed patients the chance to communicate in meaningful ways.

We've seen brain measuring headbands, helmets and glasses with functions as wide as detecting stress and controlling Netflix. And while this is a very small study, there's clearly life-changing tech at work.