

'Smart home' prescriptions for dementia patients

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Dementia patients will be handed prescriptions to kit their houses out with smart technology within the decade, experts predict.

The technology — including radar to monitor their movement, robotic devices to remind them if they have left the hob on and sensors worn in the ears to track their brainwaves and gait — is designed to help them to stay in their homes as long as possible.

It could also cut avoidable hospital admissions by spotting problems before they become crises, researchers believe. Many elements are already avail-

able and relatively cheap, they said. One in four hospital beds is occupied by someone with dementia and admissions are often down to preventable or treatable causes such as infections, falls or dehydration.

"The system for caring for people with dementia is broken," said David Sharp, a neurologist and head of a new £20 million centre at Imperial College London that will develop devices for patients. "Most patients living with dementia and carers come into contact very infrequently with healthcare professionals. What that means is preventable problems develop."

The centre, part of the UK Dementia

Medical monitors

- Sensors, including some using miniaturised radar technology, can be placed around the house to check, for example, how frequently the patient uses the lavatory, whether they have made their morning cup of tea or are becoming less active.

- Body-worn sensors can track vital signs such as heart rate and blood pressure. Researchers have developed a prototype that can be worn as a small earpiece to measure gait, brain activity and sleep. This will give doctors a fuller picture of the patient's present health.

- Artificial intelligence programmes scan the collected data to look for patterns, such as a change in walking pattern that might increase the risk of a fall.

- Robotic devices can spot if a patient seems distressed, allowing them to alert carers.

function, researchers said. "Like when you are deploying your Sky box — the level of technology is not that dissimilar from that level of sophistication — you might have your dementia engineer come over and deploy the technology into your home and that would provide the kind of information we are talking about," Professor Sharp said. "This may sound science fiction, but many of the elements of this are in place."

There are about 850,000 people living with dementia in the UK, more than 60 per cent of whom live in the community.

Payam Barnaghi, from the University of Surrey and the deputy director of the centre, which is due to open on June 1, said that stays in hospital could distress dementia patients.

"Not only are they trying to navigate a new physical environment, they are distanced from their friends and families," he said. "The technologies involved in this project will enable people to live independently at home while not sacrificing their care. Working with the latest machine-learning capabilities means the technology we're using will be able to get better at spotting warning signs and events that require intervention."

"Doctors will be able to have confidence in their ability to monitor people remotely and to react quickly to any worrying changes. Improving the quality of life of people with dementia is crucial to their and their families' overall wellbeing."

Research Institute, will work with patients and their carers to test technology ranging from robotics to artificial intelligence in their homes.

Professor Sharp hoped that in ten years' time a package of technology would be available to support patients at the point of diagnosis.

GPs might select smartphone apps to help patients track sleep or concentration levels from a dashboard of options proven to be clinically useful, he said.

That could be followed by a visit from a professional to install physical sensors to track patients, and a specially designed secure hard drive, kept within the home, to which the information collected would be delivered.

Computer programmes could then spot unusual patterns that might herald the start of an infection or a decline in