



High-tech breakthroughs on the health horizon

Words **Patsy Westcott**
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We look at some of the most intriguing innovations that will bring help to many in the not-too-distant future

Spectacles that let blind people 'see', smart shoes that allow Parkinson's patients to overcome walking problems... it sounds impossibly sci-fi. But these and a host of other high-tech gadgets are about to revolutionise healthcare.

'They have the potential to change our relationship with GPs and medical professionals,' says Professor Nick Hardiker, who specialises in e-health at the University of Salford. 'It's a move away from people being passive recipients of care.'

'What's happening now is just the start,' adds Tony Bowden, CEO of digital software company Helicon Health, creators of an award-winning online tool to link older patients with doctors and nurses. 'Health tech is likely to become ever-more sophisticated.'

Here are six innovations that could transform your health in the very near future...

1 Give-Vision

Spectacles that restore sight

These smart glasses have the potential to revolutionise life for the 95% of people registered blind who have some residual vision.

The glasses can zoom in on objects such as the TV, bus-stop signs, train-times boards and price labels. They boost colours and negative contrast, making it possible for wearers to read books, decipher bank notes and recognise faces.

One in five people aged 75 and one in two aged over 90 currently live with sight loss, according to the RNIB. 'The glasses will enable them to retain independence for longer,' says Michael Crossland, an optometrist at Moorfields Hospital.

On the market... within a year. Visit give-vision.com

2 Doppel

An artificial pulse to control mood and sleep

Imagine being able to regulate your rest or soothe anxiety at will. That's the promise of Doppel, a pulsating wristband that works like an external heartbeat. A quick tap sets it to fast to make you feel more focused, while a slow touch triggers a calming, relaxing pulse.

'In tests in a psychology lab, we have found it increased alertness,' says Manos Tsakiris, professor of psychology at Royal Holloway, University of London.

Beryl Miles, 65, from Loughborough, has been trialling the device. She finds it invaluable for treating

3 Path Finder

Laser-guided footwear for Parkinson's disease

These pressure-activated trainer-style shoes recently won the Independent Living Trophy at the AXA Health Tech & You Awards. Pressure on the heels triggers a green/red laser light that prompts wearers to step forward. This helps prevent one of the most disabling Parkinson's symptoms, 'freezing', where the

brain fails to tell the legs to move. The shoes are the brainchild of Lise Pape, who did a double masters in innovation and design at the Royal College of Art and Imperial College; her father has the disease.

'Freezing affects up to seven in ten with Parkinson's as the disease progresses. Cues – such as lines on the ground – can help by recruiting

parts of the brain not affected by the condition,' explains David Dexter, professor of neuropharmacology at Imperial College. 'The shoes could help people to keep fit and active, improving symptoms and preventing falls that accelerate the disease.'

On the market... in the next 12 months. Visit walkwithpath.com

4 BuddyWOTCH

A smartwatch to monitor lung problems

This medically certified device has a fingertip sensor that flags up impending respiratory failure in sufferers of chronic obstructive pulmonary disease (COPD), the UK's third-biggest killer after heart disease and cancer. The watch, from the company Aseptika, monitors vital signs such as oxygen level, temperature, movement and heart rate, which can warn of exacerbations or flare-ups of the condition. It also has a camera to capture images of medication, food and fluids – loss of appetite is a sign of infection.

'COPD flare-ups are difficult for patients to recognise, so by the time they seek medical help, they are often too unwell to be cared for at home and need hospital treatment for seven to ten days,' says Dr Dennis Wat, a consultant at the Liverpool Heart and Chest Hospital. If medical professionals can monitor them from afar, and give advice over the phone, this may be avoided.

The 'watch' can also help people with lung problems feel confident enough to push themselves and get fitter. Pauline Webster, 77, from Hayling Island, Hampshire, has bronchiectasis – an abnormal widening of airways in the lungs. She tried BuddyWOTCH as part of a pulmonary rehab programme, during which her lung capacity increased by 20%.

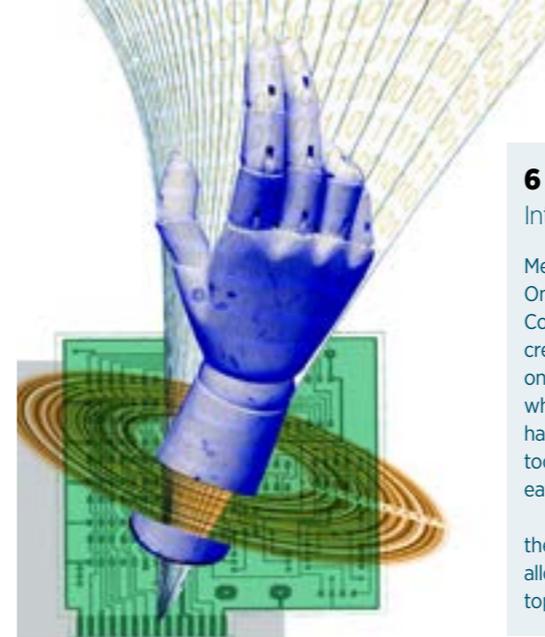
'It's given me much more confidence and I've visited friends in Norway,' she says. 'Previously, whenever I attempted to travel, I'd spend days in bed feeling unwell.'

On the market... within two years. Visit activ8lives.com

'Using Doppel on a low pulse helped me get ready to sleep'

insomnia. 'Using Doppel on a low pulse has helped me get ready to sleep and if I woke in the night, it helped me get back to sleep easily and more deeply,' she says.

On the market... in October, priced £99. Pre-order from doppel.london



6 GyroGlove

Intelligent device to steady shaking hands

Medical student Faii Ong from Imperial College was inspired to create this device by one of his patients, who had such severe hand tremor that it took her half an hour to eat a bowl of soup.

The glove works on the same principle that allows a child's spinning top to stay stable. It

has small discs that rotate at 20,000rpm. 'That's faster than a jet turbine engine, resisting movement and stabilising the hand – making it feel as if it is moving through thick treacle,' Faii explains.

Picked as one of 15 Millennial Trailblazers by Telefonica's Digital Futures, the GyroGlove

has the potential to help the one million Brits affected by tremor, caused by anything from Parkinson's to MS, stroke, overactive thyroid and essential tremor, which has no apparent cause, but affects around one in 25 people over 40.

On the market... end of the year. Visit gyrogear.co

◁ **5 VitalPatch**

A heart monitor in a sticking plaster

This innovative 'peel-and-stick' patch, launched in the US earlier this year, looks and feels just like a hydrogel sticking plaster. However, it contains a single-lead ECG to measure heart rhythm, plus biosensors to monitor breathing, skin temperature, posture, steps and falls. The information can be relayed to hospital staff.

It's powered by a tiny battery with a four-day lifespan. 'You leave it on for four days, after which you simply peel it off and throw it away,' says Valeska Schroeder of American developers Vital Connect, before replacing it if necessary. 'It could help people with heart failure or those leaving hospital after surgery feel more secure that they are being medically monitored.'

The technology has been cleared by the tough US Food and Drug Administration and is currently being piloted with heart-failure patients in four American hospitals. A similar patch, HealthPatchMD, made by the same company, has attracted interest from clinicians as far afield as Scotland and France.

On the market... in the next year. Visit vitalconnect.com/vitalpatch

On the health horizon

Several other ingenious medical devices coming soon

A CONTACT LENS TO MONITOR DIABETES

Designed to measure glucose in tears, the lens, being developed by Google offshoot Verily and a subsidiary of pharmaceutical company Novartis, connects wirelessly with a reader hidden in glasses, earrings, a necklace or clothing, which displays results on a smartphone or wearable device.

PRINT YOUR OWN HANDS

Affordable 3-D printed bionic hands for amputees, with plastic parts that work like bones and a rubber coating that serves as skin. They also have electric motors instead of muscles and steel cables instead of tendons. In development by Open Bionics.

INTELLIGENT PILLS THAT MONITOR YOUR MEDS

It can be hard to remember whether you've taken your tablets. A digestible sensor the size of a grain of sand embedded in a pill could eliminate this problem. Developed by US-based Proteus Digital Health, it's activated by your stomach acid, and sends a signal to a sensor-enabled patch, allowing you and your doctor to keep an eye on your intake.



For ten more health gadgets that could change your life, visit saga.co.uk/july-mag

WELL, WELL, WELL

Compiled by **Patsy Westcott** and **Jane Garton**

ANGLING FOR HEALTH

Casting around for a new way to relax and de-stress? Fishing could be the answer. Spending a day beside the water brings you closer to nature as well as giving you the chance to unwind and make new friends. Give it a go by attending a National Fishing Month event (July 22-Aug 29). You could get hooked!

Visit nationalfishingmonth.com (0333 577 9970)



DRY EYE COMFORT

Dry eyes affect as many as three in ten of us as we get older. The Eye Doctor microwaveable hot compress soothes grittiness, irritation and inflammation. £19.95 (the-body-doctor.com, 01484 868816, or Boots)

Try yoga

If you are one of the UK's eight million asthma sufferers, yoga could help. According to a review from the influential Cochrane Library, practising those asanas could help ease wheezing, coughing, chest tightness and shortness of breath, as well as improving quality of life. Don't stop the meds, though.

