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Stick-On Patch Proposed For Patient Monitoring

by THE ASSOCIATED PRESS

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One day monitoring a patient's vital signs like temperature and heart rate could be as simple as sticking on a tiny, wireless patch, sort of like a temporary tattoo.

Eliminating the bulky wiring and electrodes used in current monitors would make the devices more comfortable for patients, says an international team of researchers who report their findings in Friday's edition of the journal Science.

"What we are trying to do here is to really reshape and redefine electronics ... to look a lot more like the human body, in this case the surface layers of the skin," said John A. Rogers of the University of Illinois. "The goal is really to blur the distinction between electronics and biological tissue."

The researchers embedded electronic sensors in a film thinner than the diameter of a human hair, which was placed on a polyester backing like those used for the temporary tattoos popular with kids. The result was a sensor that was flexible enough to move with the skin and would adhere without adhesives.

The researchers said the devices had remained in place for up to 24 hours. Rogers said in an briefing that, while normal shedding of skin cells would eventually cause the monitors to come off, he thought they could remain in place as long as two weeks.

In addition to monitoring patients in hospitals, other uses for the devices could include monitoring brain waves, muscle movement, sensing the larynx for speech, emitting heat to help heal wounds and perhaps even being made touch sensitive and placed on artificial limbs, Rogers said.

The device will help fill the need for equipment that is more convenient and less stressful for patients, permitting easier and more reliable monitoring, said Zhenqiang Ma, an engineering professor at the University of Wisconsin, who was not part of the research team. The electronic skin can simply be stuck on or peeled off like an adhesive bandage, he noted in a commentary on the report.

Rogers is a founder of the company MC10, based in Cambridge, Mass., which is working to develop commercial uses of the devices, but he declined to speculate on how soon the electronic skin would be ready for market or what it would cost.

The monitor looks rather like a bandage and contains an antenna that could be used to transmit data, though a radio to do that transmitting has not yet been tested, Rogers said.

The current design has a small coil and could be powered by induction — by placing it near an electrical coil — Rogers said. That would permit intermittent use, he said, and for longer-term monitoring a tiny battery or storage capacitor could be used.

The monitor doesn't use an adhesive, relying on a weak force called the van der Waals force that causes molecules and surfaces to stick together without interfering with motion. The ability of geckos to climb smooth surfaces has been attributed to the van der Waals force. For longer-term use the electronic skin could be coated with an adhesive.

Rogers and co-lead author Dae-Hyung Kim, have been working on the technology for several years. They earlier worked together to develop flexible electronics for hemispherical camera

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sensors and other devices that have complex shapes.

Funding for the research came from the Air Force Research Laboratory, the National Science Foundation, the U.S. Department of Energy, the Beckman Institute for Advanced Science and Technology at the University of Illinois, and a Defense Department National Security Science and Engineering Faculty Fellowship.

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"as fortold, its the mark of teh beast!"

"HG Wells was right, were living in 1984"

"And whos paying for all this, socialist healthcare?"

There, now that we've gotten those out of the way...I think this sounds pretty neat!



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