WEARABLE HEALTHCARE TECH

Stress-busting headband
InteraXon, the company behind the Muse "brain-sensing headband", wants to make meditation easy. Used with an app and headphones, the headband guides your breathing through changing sounds of nature based on the real-time state of your brain to reduce symptoms associated with stress, depression and anxiety, and improve focus.

Blood-pressure monitor
Omron HeartGuide is a medical grade blood pressure tracker with an inflating blood cuff to take readings at night, syncs to an app and can be shared directly with a doctor.

UV sensor
Cohere’s UV Sense is a mini adhesive UV sensor to help people track how much time they spend in the sun. At only 2mm by 9mm, the near-field communication device can be worn on a fingernail or stuck to a pair of sunglasses.

Artery de-clogging
The Max Planck Institute for Intelligent Systems has developed a "micrometer” that could revolutionise minimally invasive medical procedures. The negotiable, dime-sized "microbot" housing tiny magnets enabling it to "walk, crawl and roll", and could one-day be used to deliver drugs to specific parts of the body or clean out stopped arteries.

INTELLIGENT THERMOMETER
TempTrax has developed a 24-hour smart thermometer that continuously senses, records and sends alerts to parents whose children are unwell. The sticky patch sits under the arm and monitors temperature round the clock so carers can detect changes in fever and sickness.

Smart tattoos
Researchers at Harvard and MIT have developed a way of embedding health sensors into human skin using smart tattoos that change colour according to the chemistry of the body’s interstitial fluid. Meanwhile, researchers at the University of Illinois have worked out a way of embedding flat, flexible electronic sensors into temporary tattoos to monitor electrical signals produced by the heart, brain and muscles.

Implantable wearables
Implantable sensors offer new insights into patient health patterns and medication treatment effectiveness, according to the world’s first digital medicine company Proteus Digital Health. Proteus Discover is a microscopic sensor that sits on the stomach and links with a patch worn on the torso to monitor the impact medication is having. Results are then shared with healthcare providers to determine the appropriate action.

Smart contacts
Needless blood-sugar monitoring could soon be a possibility, with scientists working on a smart contact lens to measure glucose levels using tears. Google threw its hat into the ring in 2014 by launching its own connected contact lens research project, though a regulatory-approved product is still yet to make it market.

Virtual doctors
2017 saw an influx of virtual consultations with doctors, as a variety of apps were launched to video link patients directly with GPs, without the need to visit a surgery.

Wearable ECG
QardioCore is a wireless electrocardiogram (ECG) aimed at improving detection and monitoring of cardiac conditions with minimal disruption to daily life. The lightweight band sits around the chest and doesn’t have the wires and sticky patches of a conventional ECG.

Virtual consultations
According to the latest Accenture survey of smartphone mobile broadband users across the globe, 63% of consumers would be willing to share personal data with their health insurance provider for global wearable healthcare market in 2021.

Most popular healthcare apps of global app users that use the following

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness</td>
<td>59%</td>
</tr>
<tr>
<td>Diet/nutrition</td>
<td>52%</td>
</tr>
<tr>
<td>Symptom navigator</td>
<td>36%</td>
</tr>
<tr>
<td>Patient portal app</td>
<td>28%</td>
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<tr>
<td>Health/disease tracker</td>
<td>25%</td>
</tr>
<tr>
<td>Medication tracker/reminder manager</td>
<td>12%</td>
</tr>
<tr>
<td>Chronic condition/disease manager</td>
<td>10%</td>
</tr>
</tbody>
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Smart insulin patches
For many patients with type-2 diabetes, maintaining a consistent level of insulin is a daily struggle, full of finger pricks, injections and a strict diet. Researchers are developing wearable micronneedle patches that can monitor glucose levels and autonomously administer insulin directly into the blood, or administer drugs to stimulate the pancreas to release more insulin.