5 Innovations that are revolutionizing global healthcare

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- Healthcare innovation is accelerating at an unprecedented scale, particularly in the digital sphere, the World Health Organization says.
- Advances such as artificial intelligence and gene editing are transforming the way diseases are detected and treated.
- Here are 5 innovations that are pushing boundaries in healthcare.

Suppose you or someone you know needs surgery or treatment for an illness or disease. In that case, it's increasingly likely that advances in medical technology will improve the chances of a successful outcome.

Medical innovations have occurred throughout history, continually advancing our ability to treat complex diseases. These include the first vaccine for smallpox in the 18th century, the development of antibiotics in the 1920s and the world's first organ transplant three decades later.

However, the 21st century is bringing even more progress, with technological advances revolutionising the healthcare sector. The World Health Organization says innovation, particularly in the digital sphere, is taking place at an unprecedented scale.

Innovations that are transforming the global healthcare industry

Here are five innovations that are pushing even more boundaries in healthcare.

Artificial intelligence (AI)

The use of algorithms and machine learning in detecting, diagnosing and treating disease has become a significant area of life sciences. Some believe it is the biggest healthcare revolution of the 21st century.

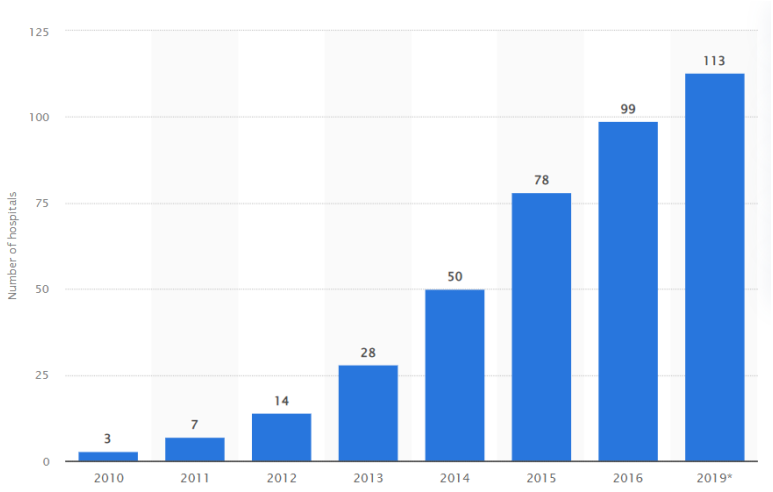
AI can detect diseases early and make more accurate diagnoses more quickly than conventional means. In breast cancer, AI is enabling mammograms to be reviewed 30 times faster with almost 100% accuracy, reducing the need for biopsies.

Meanwhile, a deep-learning algorithm developed by health-tech company Qure.ai is enabling the early detection of lung cancer. The firm says a study demonstrated a 17% improvement when using AI to interpret chest x-rays compared to conventional radiology readings. It has formed a partnership with drug giant AstraZeneca that aims to scale up the technology to reduce lung cancer mortality rates around the world.

3D printing

The use of 3D printing techniques in healthcare is growing rapidly. More than 110 hospitals in the US had facilities for point-of-care 3D manufacturing in 2019, compared with just 3 in 2010, according to data provided by Statista.

Number of US hospitals with a centralized 3D printing facility



The use of 3D printing techniques in healthcare is growing rapidly.Image: Statista.

The technology is being used for creating dental implants, replacement joints, as well as for made-to-measure prosthetics. Research into using 3D printers for manufacturing skin tissue, organs and even medication is also underway.

One of the main benefits of 3D printing is that it greatly accelerates production processes and, therefore, also reduces the cost of traditionally manufactured products. The technology has reduced the time it takes to produce hearing aids from more than one week to just one day, according to the American Hospital Association.

CRISPR gene editing

Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) gene-editing technology can potentially transform how diseases are treated. It could help make significant advances against killer diseases like cancer and HIV in a matter of years.

The technology works by “harnessing the natural mechanisms” of invading viruses and then “cutting out” infected DNA strands. By altering cell mutations, CRISPR also has the potential to transform the way rare conditions like cystic fibrosis and sickle cell disease are treated.

However, ethical concerns around its use need to be addressed, as its potential ability to change genomes in children has been raised. A team of scientists was prosecuted in China in 2020 after they claimed to have created the world’s first “designer babies” using CRISPR.

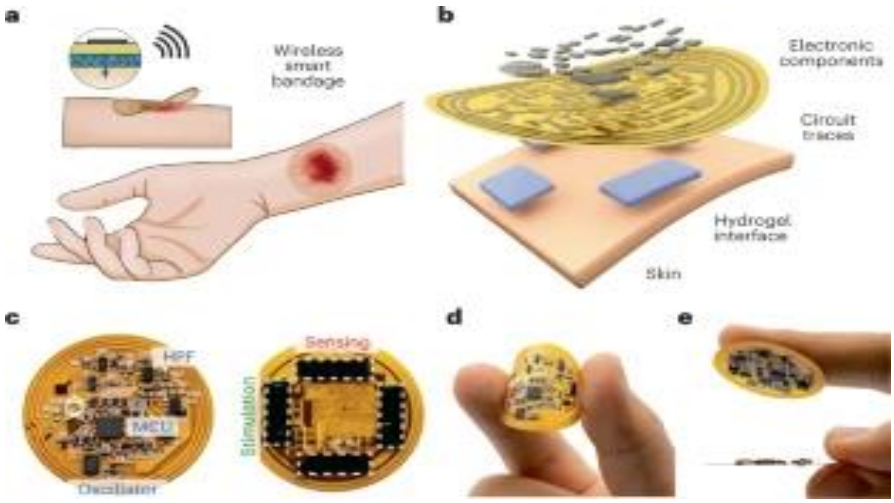
Virtual reality (VR)

The VR and AR (augmented reality) market is booming worldwide, and both technologies are being used increasingly in healthcare applications. The technology can be deployed in various ways, such as performing more advanced surgery, helping with pain relief, and treating mental health conditions.

Surgeons can also use a VR helmet to rehearse procedures, as well as to have full sight of the inside of a patient's body. And the technology can help people to "unlearn" chronic pain by retraining the brain, Forbes says.

VR can also help people with mental disorders overcome their fears by providing them a controlled environment for social interactions. Two hours of exposure to treatment for fear of heights cut patient anxiety by an average of 68%, according to Forbes.

Smart bandages



[A bandage that uses sensors to monitor wound healing](#) has been developed by researchers in the US. It “promotes faster closure of wounds, increases new blood flow to injured tissue, and enhances skin recovery by significantly reducing scar formation”, according to the Stanford University team behind it.

A thin electronic layer on the bandage has temperature sensors that monitor a wound. If necessary, they can trigger more electrical stimulation to accelerate tissue closure.

“With stimulation and sensing in one device, the smart bandage speeds healing, but it also keeps track as the wound is improving,” said Artem Trotsyuk, co-author of a study of the bandage.

The device needs to overcome cost and data storage issues before going into mass production. However, it could eventually offer significant help to people with suppressed immune systems and diseases like diabetes, who often suffer from slow-healing wounds.

Taken and adpated from: https://www.weforum.org/stories/2023/02/health-future-innovation-technology/