

”Emerging Technologies in Healthcare”

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January 2022



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Emerging Technologies in Healthcare are as follows :-

0.1 BIOPRINTING: CREATING NEW ORGANS

In addition to keeping organs alive outside of the body, other options should also be explored. Although it may sound like science fiction, 3D printed organs are a very real, although developing, technology that has already made its way into clinical testing. Ears, corneas, bones, and skin are all organs in clinical testing for 3D bioprinting.

The process is not too different from traditional 3D printing. First a digital model of the tissue must be created. Careful attention needs to be paid to the resolution and matrix structure, as the materials used in the printing process are quite literally living cells called bioink. They then need to test the organ's functionality with stimulation.

One of the ways that rejection of an organ can be prevented is by using the cells of the patient requiring transplantation. These cells can be grown in a culture and then cultivated into the bioink necessary for printing. Bio-printing has been done in the past but has not yet hit the mainstream. It's possible that through AI analysis of organs and of recipient patient characteristics, organs can be better engineered to be compatible with their new hosts.

0.2 DATA-DRIVEN HEALTHCARE

Interoperability took a large step forward in November 2020, when Google Cloud launched its healthcare interoperability readiness program. Aimed at helping payers, providers, and other organizations prepare for the federal government's interoperability regulations, it gives program participants access to data templates, app blueprints, security tools, and implementation guidelines. If healthcare organizations can get on the same page, the potential of the industry's big data could quickly turn kinetic. Data-driven healthcare solutions allow organizations to leverage the power of artificial intelligence and machine learning to increase revenue, reduce expenses, improve patient outcomes, reduce risk, and optimize operations. Aptitive's consultants and strategic technology partnerships can make AI and machine learning solutions a reality for healthcare organizations.

With the power of AI, staff can concentrate on high-priority administrative functions without worrying about more mundane manual tasks. Productivity is improved without sacrificing the highest quality of patient and customer care. Machine learning options allow your organization to leverage powerful tools to aid in the completion of complex processes, diminishing errors and improving efficiency across every department.

0.3 SMARTER PACEMAKERS

The artificial pacemaker, which dates back over 100 years, is still a critical piece of medical technology: over a million patients use them. By delivering electrical impulses to heart muscle chambers, they can prevent or correct life-threatening heart arrhythmias. Remotely monitoring these devices is an essential part of their functionality. Traditionally, that monitoring has been far from optimal, relying on complex interfaces that the patient may not fully understand.

In 2021, pacemakers will get a little bit smarter. By enabling pacemakers with Bluetooth technology, they can be linked with smartphone-based mobile apps that patients better understand and utilize. That, in turn, will improve remote monitoring, and, as a result, patient outcomes. Medtronic, one of the largest medical technology companies in the world, has already rolled out its next-gen patient monitoring system for pacemakers.

0.4 Internet of Medical Things (IoMT)

The Internet of Medical Things (IoMT) is an infrastructure consisting of connected medical devices, sensors, software applications, and healthcare IT systems that focus on medical testing, monitoring, and diagnostics.

IoT-enabled medical devices include sticking plasters that monitor your body temperature, blood pressure and heart rate, and wearable devices like smartwatches and smartphones with health-related apps that track whether you're sleeping, healthy or taking your pills, and sends alerts to your doctor when there are problems. Portable biosensors are used to analyse patient data for diagnosing health problems, while ingested or implanted sensors can discreetly measure temperature and transmit this data to your doctor. IoMT can contribute to better health outcomes. The Internet of things (IoT) describes physical objects (or groups of such objects) that are embedded with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.[1][2][3][4]

The field has evolved due to the convergence of multiple technologies, including ubiquitous computing, commodity sensors, increasingly powerful

embedded systems, and machine learning. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), independently and collectively enable the Internet of things. In the consumer market, IoT technology is most synonymous with products pertaining to the concept of the "smart home", including devices and appliances (such as lighting fixtures, thermostats, home security systems and cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smartphones and smart speakers. The IoT can also be used in health-



care systems.

There are a number of concerns about the risks in the growth of IoT technologies and products, especially in the areas of privacy and security, and consequently, industry and governmental moves to address these concerns have begun, including the development of international and local standards, guidelines, and regulatory frameworks.
