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Important Healthcare Technology Trends in 2021 You Can't Ignore

18-23 minutes

The field of healthcare has historically been one of the last ones to adapt to any changes, but it is now incorporating the technological advancements at an unprecedented pace.

The advent of technology in healthcare is proving to be of tremendous benefit to the patients, healthcare app developers as well as the healthcare providers.

While the introduction to many of these technology trends began a long time back, the actual implementation of the same is taking place now.

Healthcare IT is a promising premise which has the potential to drive healthcare forward, make it more accessible, improve interoperability, enhance patient experience through patient engagement solutions and reduce the overall cost of healthcare delivery in the long run by making it more efficient and data driven.

Here's what we can expect as the emerging healthcare technology trends 2021 and the future applications of these technologies in the days to come.

1. [Artificial Intelligence in Healthcare](#)
2. [Telemedicine](#)
3. [Cloud Computing](#)
4. [VR and AR in Healthcare](#)
5. [Big Data and Predictive Analysis](#)
6. [Internet of Medical Things](#)






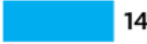
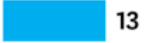



#1 Artificial Intelligence in Healthcare

Artificial Intelligence techniques are constantly being used by AI consultants in order to unlock the clinically relevant information from underneath heaps of healthcare data which is of paramount importance to clinical decision making.

These fall broadly in two categories, machine learning and natural language processing. In 2020, AI is all set to significantly transform how healthcare systems operate, connect with patients, and provide care by increasing the overall efficiency of patient management.

While we look at the future applications of AI, read our detailed guide on [Artificial Intelligence in Healthcare](#).

10 AI Applications That Could Change Health Care

APPLICATION	POTENTIAL ANNUAL VALUE BY 2026	KEY DRIVERS FOR ADOPTION
Robot-assisted surgery	 \$40B	Technological advances in robotic solutions for more types of surgery
Virtual nursing assistants	 20	Increasing pressure caused by medical labor shortage
Administrative workflow	 18	Easier integration with existing technology infrastructure
Fraud detection	 17	Need to address increasingly complex service and payment fraud attempts
Dosage error reduction	 16	Prevalence of medical errors, which leads to tangible penalties
Connected machines	 14	Proliferation of connected machines/devices
Clinical trial participation	 13	Patent cliff; plethora of data; outcomes-driven approach
Preliminary diagnosis	 5	Interoperability/data architecture to enhance accuracy
Automated image diagnosis	 3	Storage capacity; greater trust in AI technology
Cybersecurity	 2	Increase in breaches; pressure to protect health data

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Future Applications

Voice assistants: use of Siri or Alexa for completion of routine tasks in our homes has become a habit for us. AI would make a similar transition in the field of healthcare as well with the formation of health care based virtual assistants.

These AI based assistants would help clinicians prioritize their tasks and automate non-core routine processes.

Medical imaging: Automation of analysis of medical images by the use of machine learning has the potential to be one of the biggest application of healthcare AI.

Aggregation and analysis of the image data, cross-referenced against the existing data-sets can be used to provide the predictive diagnosis to the patients.

It can also be utilized on a large scale for predictive analysis of a certain condition by statistical analysis of the disease prevalence across populations.

This can be of great use in case of unavailability of trained personnel or in regions where access to medical facilities is difficult.

Significant research is already being done across various institutions in this segment and is surely going to continue in 2021.

AI-driven patient health monitoring tools: with use of NLP and ML, the patient health monitoring tools can range from personalized voice assistants that help patient with management of drug regimens and chronic medical conditions to chat-bots that interact with the patients, collect medical information, track symptoms and offer possible recommendations.

Medical research: AI can be used to effectively process data that isn't humanely possible to compute in a very short time and thus aid in research.

The data so processed can be used to identify population trends, match the ideal patients with clinical trials and research studies and to come up with novel drug combinations to further pharmacological research.

AI can sift through research data at an unprecedented rate and discover hidden patterns in a more accurate manner.

#2 Telemedicine

A large number of people fail to reach out to the healthcare providers within the required time due to delay in scheduling of the doctor's appointment.

[Telemedicine](#) offers a viable solution to this problem by negating the need to visit the doctor's office and giving the option of at-home virtual consultation.

Not only does it save time and resources, but it also makes scheduling more efficient and thus results in better healthcare delivery.

While telemedicine has been around for the last 3 decades through the use of telephones, the advent of video conferencing, wearable devices and easy availability of smartphones has brought it to the forefront healthcare delivery services and has made virtual care possible.

Tip: *Arkenea has 10+ years of experience in the [development of telemedicine applications](#). Get in touch with us today for a free quote.*

Future applications

While the major application of telemedicine has been remote consultations with the physician, the technology is all set to evolve and become more organized in the year to come. We look at the several benefits of telemedicine:

Regulation and pay parity: Telemedicine is already being widely accepted as a formal system of healthcare delivery. Internal laws have been passed in 32 states across the US to allow for parity in telemedicine and the rest as soon going to follow suit.

Upon actualization of the legislation, the physicians would be allowed to be reimbursed for telemedicine visits at a similar rate for in-person visits which would lead to more widespread acceptance of telemedicine technology by both practitioners as well as the patients.

Telemedicine in schools: Medicaid reimbursement for school-based telemedicine has already been authorized by 18 US states and others have telemedicine appointments covered by private insurers, according to a Pew report.

This trend is sure to continue in the year to come with other states also laying down the requisites for the same.

The technology would not only be effective in management of acute diseases but would also result in better management of chronic as well as contagious diseases increasing student productivity and making management of health problems in school kids more efficient.

Mobile health: The rapid advancements we are seeing in the healthcare app space is going to continue in 2020 as well.

Apple has launched its open source software frameworks like Carekit and Researchkit which are great platforms for app developers to build healthcare based medical apps and contribute to medical research.

There are many healthcare developers for hire with core domain expertise. mHealth initiatives would see better outcomes in the year to come with the focus on providing personalized care to individual patients and use of data sharing for research in early diagnosis of diseases and their treatment.

Post-discharge patient monitoring: Telemedicine has the potential to transform the management of chronic diseases by remote patient monitoring, and will play a major role in reduction of patient readmission rates.

A number of healthcare providers now include RPM systems as a part of their post-discharge plan to facilitate effective post discharge prophylaxis and they are sure to increase in the coming year.

#3 Cloud Computing

Data collection and record keeping are an integral part of healthcare, and historically, management of this data has always been a challenge for healthcare providers.

[Cloud computing in healthcare](#) has become the go-to option for management of electronic medical records.

It is advantageous for both patients as well as healthcare providers as it makes the consultation process more seamless and saves valuable time. Storing data on the cloud makes gives it remote accessibility and facilitates better collaboration.



cloud computing in healthcare

Future applications

Hybrid clouds: Data security concerns are the biggest obstacle to the adoption of storage of data on the cloud. Public clouds are not secure enough and setting up and maintaining a private cloud environment is very expensive.

The solution to this is the hybrid cloud, which is a combination of the private and public cloud technology and thus facilitates a more secure cloud computing environment.

Real-time data processing: integration of medical devices with the cloud storage environment and use of EHR and EMR would result in the availability of real-time data to the healthcare practitioners and would result in far better patient outcomes.

Clarity regarding regulations and better data security: A lot of efforts are being put to establish clarity regarding the storage of patient data on the cloud.

According to Black book research, 93 percent of hospital CIOs are actively working towards acquiring the technical staff needed to configure, manage and support a HIPAA-compliant cloud infrastructure.

Rapid work is also being done on techniques such permission-based data availability, encryption of data, creating backups and exploring recovery options.

Ease of interoperability in the healthcare sector: Cloud storage also makes it possible to access the data remotely thus giving access to specialists who can then take better and more informed decisions

about patient care.

It is going to bring down the geographical barriers in patient care, provide better healthcare facilities to people living in remote areas which aren't easily accessible and ease the process of delivery of healthcare services by integration of patient data across common platforms.

Related Reads:

- [8 Tech Innovations Transforming the Field of Oncology](#)
- [5 Advancing Surgical Technologies Shaping The Future of Healthcare](#)
- [Secret Behind Exponential Growth of mHealth Apps](#)

#4 VR and AR in Healthcare

Virtual Reality and Augmented Reality are no longer the stuff of science fiction and are actually finding widespread application in the healthcare industry.

Right from education of medical students to diagnosis, treatment planning and patient management, this technology has managed to become an integral part of every sphere of healthcare and it still has a lot of unbridled potential.

Future applications

Surgical Training: Up until very recently, the only tools available to medical students to hone their surgical skills were practicing on cadavers before they could actually progress to performing procedures on the patients.

VR and AR technology can now be used for visualizing surgical scenarios and planning the operation. It acts as a tool to plan and optimize the sequence of events during the surgery and also prepare the possible course of action for any circumstances that arise.

Work is already being done in this direction in form of Microsoft's HoloLens which helps surgeons to visualize the internal organs and rehearse the actual procedure before actually performing the surgery.

It is sure to improve multi-fold and incorporate more advances in the year to come.

Improved visualization and body mapping: There are AR applications already available which aid in locating the vein like Accuvein and Veinseek pro, which help in visualizing the veins before starting with IV infusions.

This technology is likely to see further progress in the field of body mapping in the coming year.

With the use of multiple sensors and visualization techniques, a full recreation of the patient's body would be possible in the future which would greatly influence the management of complicated cases and can even be applied in advanced diagnostics and risk assessment without the need of invasive tests and penetrative surgeries.

Stress reduction and enhanced hospital experience: In case management of chronic diseases and debilitated patients, use of VR goggles have been documented to have a proven soothing effect on the patients. It helps in chronic pain management by lessening the use of pain relief medications.

VR and AR have application in reduction of stress that is typically associated with a stay in the hospital premises and in 2021, we would see progression of this technology to such a stage that it can provide even more immersive experiences and enhance the hospital stay by providing psychological relief.

Physical therapy and management of phantom limb pain: Phantom limb pain is when the amputees feel that they are unable to relax their missing limbs and hence feel a constant pain.

Use of this technology to make the patient make use of their missing limbs for doing simple tasks virtually, by using myoelectric sensors connected to the stump has shown proven pain relief.

The next year is going to see much progress and refinement in the technique as well as mass incorporation of the same for physical therapy.

Mass medical learning: Startup Medical Realities hosted the first worldwide virtual reality live stream of a surgery earlier this year, which was attended by over 50,000 people.

While the surgery involved use of a camera mounted on a nearby table, we could see further applications of this technology in which streaming is done directly from the surgeon's headgear.

It would provide numerous medical practitioners with a unique learning opportunity where they can watch the surgery at close proximity.

#5 Big Data and Predictive Analytics



big data in healthcare

Compilation and collation of healthcare data which is very widespread is a challenge in itself.

Convergence of powerful computing, advanced database technologies and cutting-edge analytics software has led to big data finding its much-needed application in the field of healthcare.

A huge amount of medical data is being produced at both organizational as well as individual level ranging from medical diagnosis and imaging data in medicine to monitoring fitness data.

The big data analytics tools and repositories generate reliable and calculative insights out of these volumes of data within a very short duration.

The amalgamation of these data-sets from various sources including hospital, pharmacy, insurance and even individuals and their subsequent analysis to get meaningful results would result in better healthcare outcomes at a lowered cost.

Future applications

Incorporation of medical devices data: The data collected from various fitness and wearable devices would be used to provide customized care by acting as a diagnostic toolbox and also perform predictive analysis regarding the predilection and pattern of diseases across various population demographics.

Precision medicine and research: Big data will give a boost to research in precision medicine resulting in patient-specific care and change in medical attitude from focusing on the masses to individuals instead.

It would result in better patient profiling and formation of efficient predictive models for individual patients.

Lowering of costs and workflow optimization: use of predictive analysis on patient population cohorts can help in risk estimation and thus result in an accurate determination of the treatment plan to be followed.

Real-time control of infections: Google launched flu trends back in 2008. While it was a great concept, it failed due to discrepancies in the data collected.

With the advances in big data over the last decade, healthcare organizations can now utilize the patient data collected in an effective manner to predict the high-risk zones for infections and epidemics.

Collection of data about common indicators of infection, such as sepsis can not only help to identify the cases at high risk of infection, but it can also help make hospitals a safer place for the patients and help improve patient outcomes.

#6 Internet of Medical Things (IoMT)

From smart phones to smart homes, the network of connected devices keeps growing with each passing day. Internet of things, commonly known as IoT is already commonplace in our everyday lives

and is paving the way for [IoMT](#).

There already are a number of medical devices for the end consumers which are meant to track and record the fitness and health data to regularly monitor the health status of the individuals.

Their numbers, functionalities embedded within them and their adoption rates are only going to increase in the future.

The medical devices have numerous applications and possess inbuilt sensors like ECG and EKG monitors, temperature, blood pressure and glucose estimators to track and record user data.

The data compiled by these devices is then utilized by the healthcare based mobile applications to check the health status of the individual on a day to day basis and detecting any abnormalities the moment they occur.

Future applications

IoMT is not going to be limited to just wearable devices, here are the ways in which the technology will transform and adapt in the year to come.

Drug delivery and supply chain management: The medical devices by use of RFID chips would start being used for supply chain maintenance.

FDA has recently set down guidelines for radio frequency identification (RFID) which includes tagging and packaging of medicines so as to ensure maintenance of supply chain quality by the manufacturers and making the system more transparent and efficient. This is likely to lead to better inventory management resulting in less wastage.

Management of chronic diseases: IoMT is bound to completely transform the way chronic conditions such as hypertension, diabetes and chronic organ failures are managed.

Devices with high precision sensors which the patient wears all the time would constantly track medical data and issue immediate alerts on detection of any anomaly.

Centralized collection of the specific data-sets regarding these chronic conditions would play an important role in research. Tracking of the disease-specific trends across various populations would aid in predicting disease progression.

Remote patient monitoring as an adjunct to telemedicine: Data collated by the IoMT devices would prove to be of great value to the clinicians. Instead of relying on the patient for subjective symptoms report, the healthcare providers would be able to remotely monitor the patient and access the relevant

patient data thus resulting in accurate diagnosis and personalized treatment planning resulting in better outcomes.

Elderly and debilitated patient care: With increasing life expectancy, the healthcare issues the elderly population face is bound to rise. IoMT would prove important not just for tracking vitals but also ensuring better patient compliance by ensuring that the prescribed medication is taken on time.

Mobility is yet another challenge for the elderly and debilitated patients and advent of portable diagnostic devices in the days to come would not only reduce the number of visits to doctor's office but would also reduce the ever-rising healthcare costs.

IoMT is thus set to transform the healthcare industry by empowering the medical practitioners as well as individuals owning the medical devices for making data-driven decisions, thus resulting in better patient compliance and positive treatment outcomes

Wrapping up

Technology in healthcare is still relatively new and though it is witnessing adoption at a phenomenal rate, the advances that have taken place till now are just the tip of the iceberg.

Healthcare is going to revolutionize and reinvent itself in the days to come and is currently a field of exciting opportunities.

If you are looking to start your own journey into the field of healthcare technology or looking for a [healthcare software development company](#), feel free to contact us for a quote. We specialize in providing custom healthcare and medical software development services.