

2024 INDUSTRY TRENDS:

MEDICAL DEVICES



As we continue into 2024, the [medical device industry](#) is evolving rapidly. Patients are increasingly demanding convenience, accuracy, and an overall smoother experience from the healthcare system. Medical device companies can help facilitate these changes with innovative and technology-driven solutions.

In 2024, medical devices will become smarter, more AI (Artificial Intelligence)-driven, and more interconnected, enabling earlier diagnosis and enhancing communication between doctor and patient. In addition, medical device companies will continue to prioritize protection against cyber-attacks, security backups, and sustainability initiatives to improve general community safety.

This report dives into the five medical device trends we expect to see [impacting the industry](#) in 2024 and beyond.

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**ARTIFICIAL
INTELLIGENCE
OPPORTUNITIES**

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**INTERNET OF MEDICAL
THINGS**

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AWARENESS & RISK**

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**SUSTAINABILITY &
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**RISE OF AT-HOME
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1 ARTIFICIAL INTELLIGENCE OPPORTUNITIES

Along with many other industries, [Artificial Intelligence \(AI\)](#) is transforming the medical device industry, enabling greater data-driven analytics and [improving the doctor-patient experience](#). AI can analyze thousands of rows of data at a much faster rate than the human eye. Traditional labor-intensive jobs, like a clinical researcher or healthcare data analyst, can be made easier through a simple computer algorithm with AI; from that data, they can provide suggested diagnoses or methods of treatment. This technology is crucial to medical devices, as they create hundreds of data points every time they measure blood pressure, heart rate, etc.

While we've been leaving diagnosis and healthcare decisions to doctors for years, human error still exists in this field. About [4–17% of hospital admissions are associated with adverse medical events](#), and nearly two-thirds are preventable. Doctors may overlook certain symptoms, [have implicit bias](#), or just make simple mistakes when reading data. According to a study on medical students, [73% of students held at least one false belief about the biological differences of races](#), which leads to mistakes when assessing a course of treatment.

AI can help [omit doctors' unconscious biases](#), helping to improve equity in healthcare as well as creating a doctor safety net in which to double-check data. The Internet of Medical Things, or a system of medical cloud data, generates a very large amount of data from medical devices that can be transmitted to doctors. These data points can be analyzed through AI, enabling predictive analysis and monitoring treatment efficiency.

AI can also do more than just provide predictive medical analysis for patients – it can be used in the production and manufacturing processes. AI can enable manufacturers to create a [digital factory twin](#), meaning obtaining a virtual simulation of what is happening in the physical factory. Having digital replicas of the physical manufacturing environments allows organizations to run situations and simulations without affecting production. Organizations can analyze their production processes easily when having a digital tool to help locate inefficiencies and money wasters. As such, medical device production is made simpler and [more resourceful with AI](#), making it an appealing solution for healthcare manufacturers in 2024.

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2 INTERNET OF MEDICAL THINGS

In 2024, medical devices are gradually becoming wireless and more advanced, bettering doctor-patient experiences and overall convenience. The Internet of Medical Things (IoMT) is a [network of connected medical devices for the transmission and analysis of health data](#). For example, a blood sugar monitor would keep track of blood sugar levels and transmit those data points to doctors, so doctors can catch a sudden or worrisome change in levels.

In 2024, this [cloud technology](#) will be highly sought after as doctors can more easily track and monitor their patients' health through medical devices – even when they're not at the physical doctor's office or hospital. Telemedicine has become a popular method of getting treatment due to its convenience and practicality, and the same can be said for the growing popularity of medical devices.

Hospitals can also use connected medical devices for their in-patient needs. In the case of a busy night with many patients in beds, nurses and doctors can use [connected wearables and devices](#) to monitor patient movements and obtain their vitals. Nurses and doctors will be notified if patients have any noticeable change in health, allowing for a larger window of time for treatment, especially in the case of sudden or unpredictable developments.



IoMT technology and systems are being explored and developed rapidly, with IoT devices expected to almost double to 25.44 billion total IoT devices by 2030. – SOURCE



3 CYBERSECURITY AWARENESS & RISK

As the presence of technology, computer databases, and digital information increases in hospitals, so does the [risk of cyberattacks on sensitive medical information](#). Medical devices are becoming increasingly advanced using wireless and internet connected systems. However, with these advancements comes a growing threat of the device becoming a target for hackers.

Healthcare facilities are one of the primary targets for hackers. In fact, electronic medical record systems make up [8% of all hacking breaches](#). An easy point of access to breach this medical information is through medical devices. With the advancements towards the IoMT, even the [most unlikely medical devices are subjected to hacking](#).

Medical devices being a point of attack have many potential consequences, including revealing sensitive information, delaying patient care, and even shutting down operations. In September 2023, the [FDA released quality systems considerations](#) for cyberattacks on medical devices stating, “*Cyber incidents have rendered medical devices and hospital networks inoperable, disrupting the delivery of patient care.*”

In October 2023, the [FDA cracked down on poorly secured medical devices](#), requiring companies to submit plans for their monitoring and post-market cybersecurity vulnerabilities of the devices. In 2024, new legislation will push organizations to prioritize updating their security measures to match growth with medical device advancements.



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4 SUSTAINABILITY & MEDICAL WASTE MANAGEMENT

In 2024, sustainability continues to be a hot topic across every industry – and the medical device industry is no exception. However, in the medical device industry, typical sustainability efforts such as “reduce, reuse, recycle” are not as straightforward.

Medical devices create waste that isn't as prominent in other industries, which makes its solutions more difficult to facilitate. These devices also often deal with hazardous waste, meaning they can't just simply be recycled because they've been exposed to bodily fluids. This creates a delicate balance between [sustainable initiatives](#) and efforts to comply with safety and effectiveness standards.

Reprocessing is a way to reuse a medical device, and it regards the sterilization and disinfectant of a medical device. While reprocessing has been a popular solution for decreasing the amount of medical device waste, it can be difficult to navigate from a legal standpoint. It poses many questions about how the device is made and whether it can withstand deep cleaning and sterilization procedures. Recycling can also be complex with the risk of contamination of biohazardous materials and [how they're disposed of](#). Finally, reducing is a viable option, however, this is contradicted with the [rise of at-home diagnostics](#) and medical devices. Overall, these traditional avenues of promoting sustainability aren't as easily implemented in this field, in turn, making people look elsewhere for solutions.

One potential consideration the industry should be aware of is ISO 9001, a global standard typically used for quality management systems. [ISO 9001 focuses on](#) resource efficiency, risk management, and legal compliance, which can help manufacturers stick to more sustainable processes. This movement toward sustainability will be even more driven if current efforts to add climate change as a quality element to ISO 9001 are implemented.

The new quality element proposed will keep organizations [accountable in addressing climate change as a quality element](#) - one that most don't currently have, including medical device companies. If this is fast-tracked within the industry, medical device manufacturers and regulatory surveillance teams should be mindful of how this might impact tracking and trending moving forward.

Medical device companies, hospitals, and healthcare in general are looking for more options to act sustainably. As of now, however, there are few options for decreasing medical device waste, and the industry is still searching for solutions.



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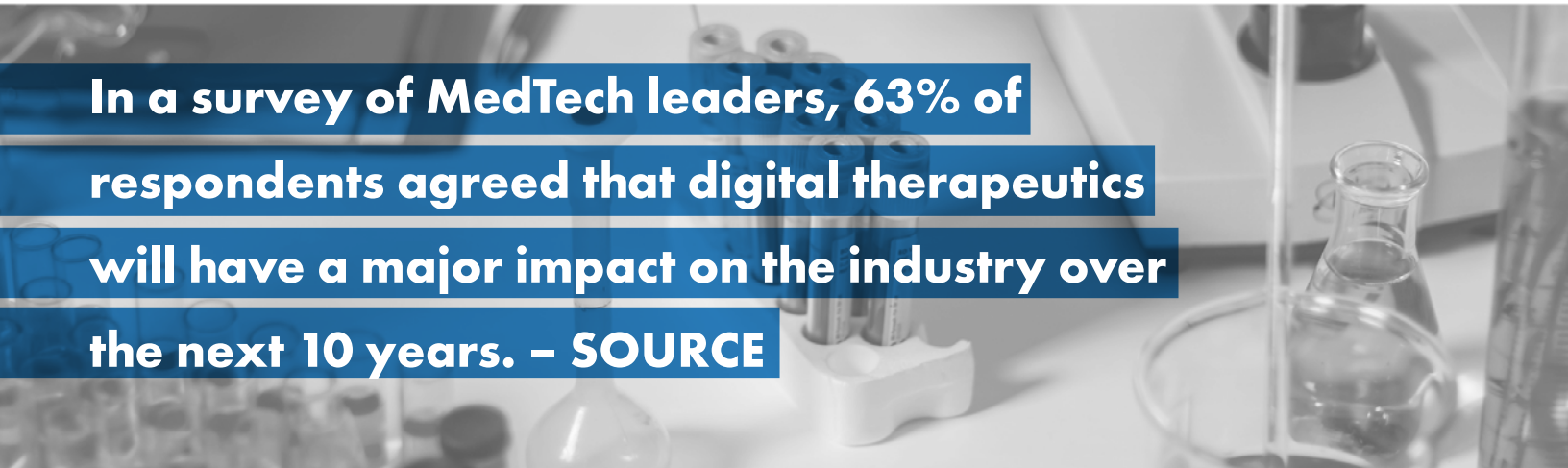
RISE OF AT-HOME DIAGNOSTICS

In 2024, patients are increasingly wanting to take their health in their own hands with the [rise of self-care and wellness being a trend](#) in the last couple years. Convenience, accuracy, and practicality are priorities for patients, which has led to the increase of [at-home diagnostics](#) and digital therapeutics. In fact, in a [survey of MedTech leaders](#), 63% of respondents agreed that digital therapeutics will have a major impact on the industry over the next 10 years.

Technology is advancing in this industry, and with it [comes better services and more accurate diagnosis](#). With the increase of wearable medical devices and at-home diagnostics, early detection of diseases is made easier, along with remote appointments, making patient solutions at home possible and manageable. With diagnostics becoming easier and less invasive, patients can easily track their health and communicate their information with providers, helping to encourage patients to get ahead of any impending illness.

The use of in-vitro diagnostics and non-invasive tests and procedures is also growing, which is attracting patients to focus on their health by avoiding potentially time-consuming or painful procedures. Take, for example, colonoscopies. These have been a dreaded procedure for years, as they require a day or two off from work and are known to be somewhat invasive. However, modern technology is simplifying these traditionally drawn-out procedures. [FIT-DNA is a system](#) where you receive a kit in the mail to collect a stool sample. If negative, no colonoscopy is needed until the next check-up three years later. While colonoscopy remains the gold standard for colon cancer screening, the at-home test can capture some patients who would otherwise go unscreened.

In 2024, we expect to see more at-home healthcare solutions that encourage convenience, simplicity, and practicality in patients' lives. These devices allow patients to better manage the balance of tracking their health at-home and following up with their doctor.



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2024 AND BEYOND



In 2024, medical devices are subjected to transformation as technology advances and patients expect better care from healthcare systems. The trends above represent a future where medical devices play a significant role in making patients' experiences in healthcare simple, practical, and accurate. The healthcare and medical device community is pivoting to meet demands of patients through innovative and tech-driven solutions, contributing to the betterment of patient care holistically. Whether it's through increasing patient autonomy or improving our societies through sustainability and safety, medical devices are facing a positive transformation.

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