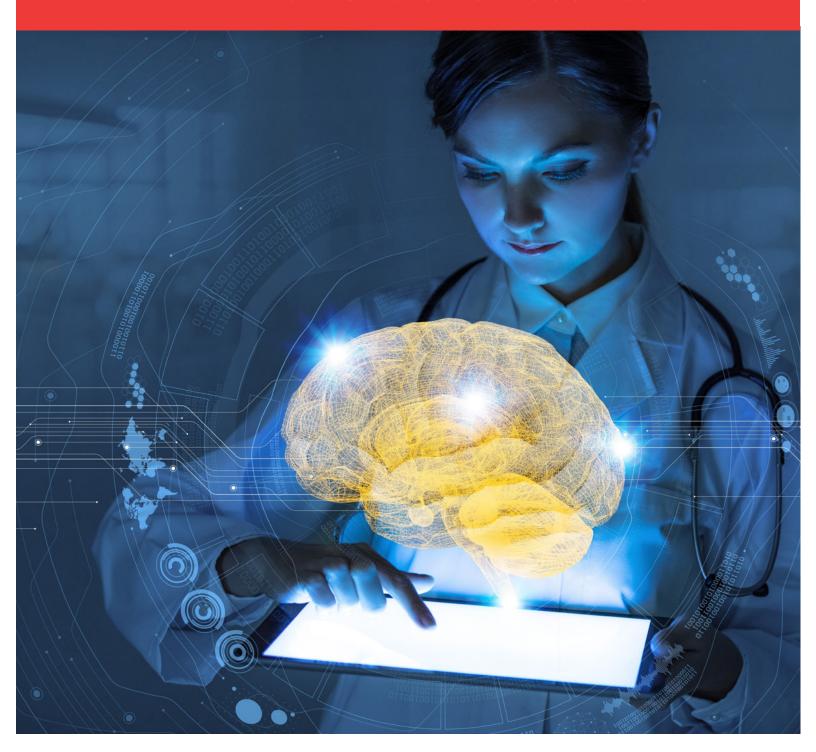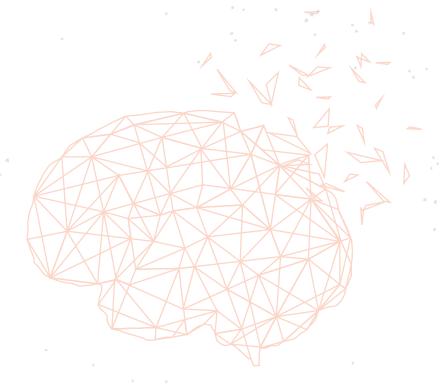# Six Degrees Medical

5 Ways Artificial Intelligence Is Changing the Pharma and Healthcare Industries

Global life expectancy at birth in the 1960s was less than 53 years, whereas children born today can expect to live 36% longer.[1] This increase in longevity can be largely attributed to biological and technological advances in pharma and healthcare, and with the growth of artificial intelligence (AI), we are seeing a revolution in the way healthcare is approached.

Artificial intelligence refers to the use of automated algorithms for data analysis and problem solving much like the human mind can do. It is accurate, fast, unbiased, adaptable and can perform monotonous and repetitive tasks without fatigue. When artificial intelligence is not only processing data but also learning on its own, it is called machine learning (ML), which is a branch of AI.[2]

Making massive strides in the pharma and healthcare industries, AI in the life sciences market was valued at over US$902 million in March of this year, and it is expected to grow at a CAGR of over 21% between now and 2024.[3] The dramatic expansion of artificial intelligence in healthcare has the potential to improve patient outcomes by up to 40%, while simultaneously cutting the costs of medical treatments by 50%.[4]

Artificial intelligence and machine learning are driven by data. Although AI was first developed in the 1950s, the immense amount of data available today accounts, to a large degree, for its rapid progress and effectiveness. In healthcare, scientific data is not only produced from within the industry but it is also made available by patients themselves. Over half (51%) of the American population is choosing to wear a fitness tracker at least once per day[5], and the use of mobile medical devices is on the rise. With the latest innovations in mobile technology, mobile health (mHealth) and the internet of things (IoT), even the smallest technology has the computing power to generate, process and share vast amounts of data directly from (and back to) patients[3], producing a goldmine of information and research to improve lives.

While the total global spend on R&D by all industries last year was US$782 billion, with IT companies leading the pack, by 2020 it is estimated that the pharma and healthcare industries will be budgeting the most on R&D[6], including AI technology. We should expect to see many exciting changes in pharma and healthcare over the next few years.

Here are 5 ways artificial intelligence is changing the pharma and healthcare industries:

1. IMPROVING CLINICAL TRIAL RESEARCH AND DRUG DEVELOPMENT

Pharmaceutical companies can expect to spend up to US$3 billion to develop a new drug[7], and less than 14% will pass FDA approval.[8] Artificial intelligence can drastically increase the success rates of new drugs on trial and greatly reduce the costs of conducting those trials.

AI has many uses in clinical trial research, from analyzing genetic information to identifying the best patient population for a trial.[9] While traditionally, drug trials only targeted one disease gene at a time, AI can search hundreds of disease-causing genes to find drugs that target them. This process can speed up research time, uncover new data sets, and get new and effective drugs to the market faster, while greatly reducing the costs of manually testing each compound.[10] Overall, AI can improve success rates and accelerate clinical trial processes, which are key to controlling the cost of prescription drugs.[11]

2. IMPROVING MEDICAL DIAGNOSTICS AND TREATMENT

According to a National Academy of Sciences report, diagnostic errors account for 10% of patient mortalities and up to 17% of all hospital complications.[12] AI can quickly analyze and correlate electronic medical records, lab results and data gathered from other healthcare sources and deliver accurate diagnostics. It can be used to discover which drug treatment will deliver the optimum result for each patient and predict individual patient reactions to medication based on their medical data.[11]

Identifying a cold virus from a blood sample using a microscope is one thing, but identifying a single malignant cell amongst millions of healthy ones using traditional methods is a herculean task. Automated diagnostic tools with deep learning algorithms can quickly differentiate between cancerous and non-cancerous cells, and as the Beth Israel Deaconess Medical Center Cancer Research Institute learned, AI diagnostics become even more effective when combined with human diagnostics. They achieved a 99.5% diagnosis success rate when they combined human pathologists' analyses with their AI diagnostics, up from 92% when using AI alone.[13] In the coming years, we should not only expect AI to enable more targeted diagnostics and therapies but also targeted prevention, as increased access to data will enable practitioners to predict and prevent a patient having a disease or health condition in the first place.[14]

3. ENABLING BETTER MEDICATION MANAGEMENT

In the US over $309 billion was spent on prescription drugs in 2016[11], and a recent CDC survey showed that almost 50% of the adult population had taken a prescription drug in the previous 30 days.[15] Yet, nearly 50% of the 3 billion plus prescriptions filled in the US were not being taken by patients or were being taken incorrectly.[16]

Using artificial intelligence, pharmaceutical companies can analyze data, such as patient demographics, payer type, out of pocket expenses and more, to deduce whether a patient might be at risk of deviating from their prescribed regimen. This will enable healthcare professionals to identify patients that might need additional support to ensure they continue their treatment.[13]

4. DELIVERING ONLINE/VIRTUAL HEALTHCARE

Although still in its early stages, AI-assisted virtual medical consultations are gaining wider acceptance, and 57% of those surveyed by Deloitte Insights are willing to try a virtual healthcare visit.[17] There are many factors that are contributing to the popularity of virtual healthcare, including patient reticence for in-person consultations, the inconvenience of meeting doctors during office hours and travel distance to a practice.

Artificial intelligence can facilitate virtual visits to a GP or healthcare specialist using technology available today. For example, a person could tell an AI-enabled virtual assistant that they feel pain in their left arm. The assistant could then access their health records, check their vital signs and even scan the immediate environment to come up with a diagnosis. The technology could then forward all compiled information to the closest healthcare facility and even ensure help is on the way.[17]

5. HELPING PHARMA PRODUCE MORE TARGETED MESSAGING

AI will enable pharmaceutical companies to better connect with patients and present opportunities for them to go deeper into patient health management. Healthcare providers are traditionally the front line when prescribing therapies, but targeted pharma-to-patient messaging can spur patients to ask for a drug by name. Artificial intelligence can help facilitate this conversation by aggregating a patient's medical data with personal information, such as demographics and media preferences. Collected from numerous data points, this aggregated data can be used to formulate and deliver a targeted message to the patient that will speak directly to their needs and improve their patient journey.[13]

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Forbes predicts that AI in healthcare will top US$1.7 billion by the end of the year, gaining traction in drug discovery, and that AI and ML will further develop human and machine interaction for the benefit of patient health.[18] The ability to correctly analyze masses of data in less time is bringing improved patient outcomes and cost savings to the pharma and healthcare industries. By improving drug testing and medical diagnostics, facilitating more targeted pharma-patient messaging, enabling virtual healthcare and reducing medication nonadherence, artificial intelligence is driving exciting change that will improve patient outcomes.

At Six Degrees Medical we recognize that major industry shifts are occurring, and our knowledge base and solutions are evolving with them. The world's leading pharmaceutical companies rely on Six Degrees Medical for insights that translate into customized medical and scientific communications tailored to suit client-specific objectives.

Click here to learn more.

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