



## Introduction

Have you ever experienced that you go to the doctor, and when you leave you have an appointment at an expert in two months? Have you ever experienced that healthcare has failed, either you, or someone close to you? Artificial intelligence in Healthcare is expected to be valued at 36,1 billion USD by 2025 according to a new market research done by MarketsandMarkets. And it will save governments and individuals for an enormous amount of money. But most importantly – it's a matter of life and death



AI in Healthcare is  
driven by us wanting  
to live, and for  
economic reasons

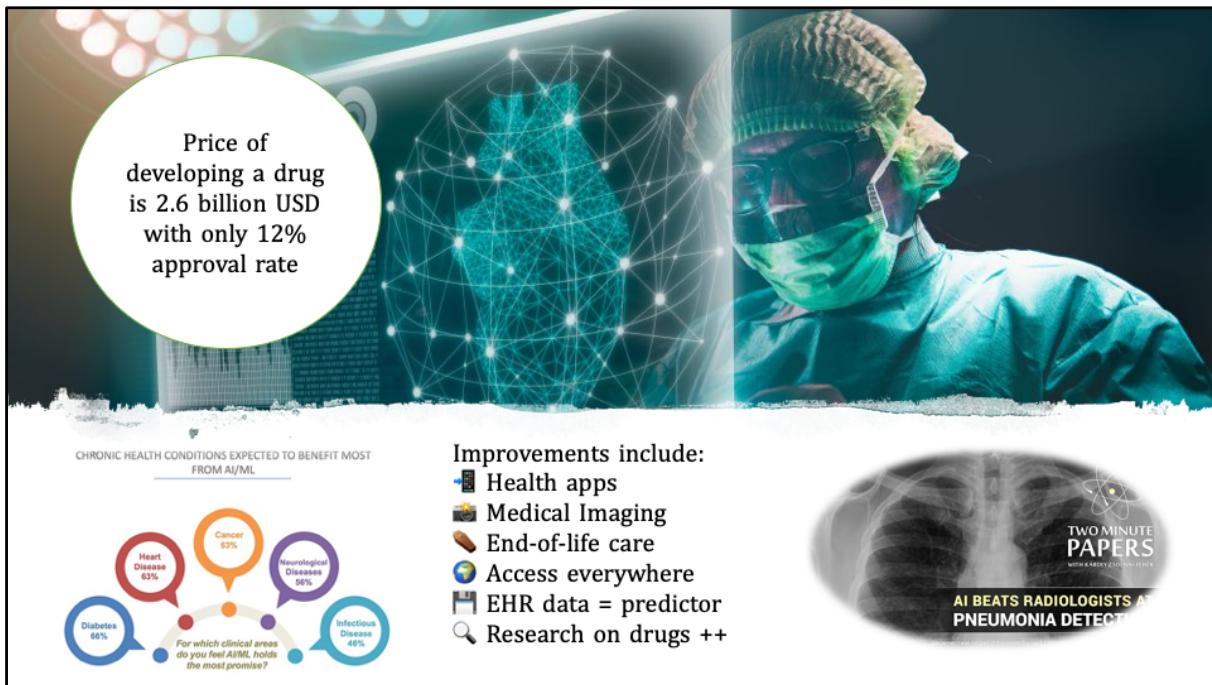
#### Key drives:

As any other industry, the healthcare industry is using big data and AI to improve today's practices, and these improvements can be many. It's both a trend and there is an opportunity there, but for many the key drivers are economic, and improving the way of living. It can be hard to predict the life expectancy of a cancer patient. It can be hard to predict who will be getting which disease and when. It can be hard to pay attention to the patient while simultaneously writing their journal and keeping all documents up to date. These are all some of the key drivers of artificial intelligence in healthcare.



#### Device + Advice:

Even though AI is disrupting the healthcare industry right now, we will always, at least for now, need doctors and nurses who can operate and understand the technology. That is why humans will be giving advice to the device.



### Improvements:

There are many ways AI and big data will improve the healthcare industry, and some of them are listed in front of you. Today you can monitor your health through apps and devices. You have your phone in your pocket all day monitoring your steps, synced to devices such as sleep monitors, BPM devices, thermo devices, weight scales, watches etc to make sure that you are healthy. All this data has huge potential, and companies will have great advantage using these to predict diseases.

Medical imaging analysis will soon replace the job that radiologists have based on training machines into recognizing different diseases. These machines have already proven to be more accurate than the humans analyzing, so we will most likely not need radiologists anymore. At the same time, the technicians needed for these jobs will have to understand technology, but an advantage is that they will not need to be doctors. They can be nurses and other health care professionals with the right understanding.

End-of-life care as they do in China.

Expanding the care in developing areas, where doctors are a rare finding. It will even

be possible with the use of your health record to track your health more precise than just the apps, which again will be able to predict if you will get a disease. This also goes for knowing if your DNA entitles some diseases that we did not know about.

The average price of developing a drug is 2,6 billion USD, with an approval rate of only 12%. With AI and big data we will be able to efficient this, and know which drugs are more efficient for what diseases, as well as DNA and genes. An important note is that people from one region has not necessarily the same physiologies as people from another region. Same goes for people of different ethnic groups.



### Use case 1: Cancer

We have MRI, X-rays and CT scans to help us find out what disease we have, but with AI we will potentially create a new device, or several new devices that will help us not having to take a physical tissue sample. This way the barrier of finding out if someone has cancer will be lower. We will also be able to see if someone has a rapid or slower type of cancer sooner and predict life expectancy. Immunotherapy will also be enhanced with the use of data to analyze who is eligible of this kind of treatment. The treatment is about using your own cells to attack the cancer. This has proven well on many patients, but it is still hard to know who this kind of treatment is good for.



#### Use case 2: Time management:

When you go to the doctor, the doctor spends a lot of time writing down what you say, which he or she could have spent on you as a patient. With technology as speech recognition etc, an AI machine could do that for them. AI could also help out on faster diagnosis when running tests, and help with to-do lists sorting out what is more urgent than other tasks.



#### Success factors and barriers:

For AI to work in healthcare it is crucial that patients trust the machines and the teams building them. AI will improve speed and accuracy, and for it to do that us humans need to adapt to the situation. There is also a lot of data in different servers and systems, and it is important that this information is somehow made available to make predictions, especially when it comes to prediction of patient disease before they get sick, but also for understanding what is wrong with someone consulting the doctor. All this innovation will save governments and hospitals huge amount of money, but it is also a must for people being willing to invest in the innovations, that's why cost savings is also a success factor.

Accessing data that is private can be hard, especially under regulations such as GDPR. It is a safety net for patients, but a nightmare for the developers of AI. This is also why governments can be a barrier, because they have laws and regulations as well controlling data and people's identities. The employers themselves might also not want to contribute at jeopardizing their job, so good communication all the way to ensure the safety of the workers is crucial for this task.



Dystopia: Robots and AI control everything

#### Dystopia:

It is important that even though we will have computers taking over many tasks, one after the other, we must not forget to keep our knowledge of the subject. We still need to educate doctors and have people research on how to do new procedures. Forgetting this can be our own death sentence in the end, unless we want machines to become the dominant “species” on earth.



## Conclusion

AI is in rapid growth right now, and in just a few years we will see the changes. The most important change we will notice is that AI in healthcare will be able to reduce the amount of hospital mistakes, which is one of the leading causes of death's for patients. Since the world of AI is changing so fast, I looked at different sources, but put the most weight on the newest.

[https://healthcareweekly.com/wp-content/uploads/2019/03/shutterstock\\_1153763470-1.jpg?x42745](https://healthcareweekly.com/wp-content/uploads/2019/03/shutterstock_1153763470-1.jpg?x42745)

## References:

- "AI, ML, and Big Data in Healthcare." By Hackernoon, October 14, 2019. <https://hackernoon.com/ai-ml-and-big-data-in-healthcare-89c21b31ca9e>.
- Baiju, Megan Ray Nichols, and Philip Piletic. "Artificial Intelligence in Healthcare Worth \$36.1 Billion by 2025; Report." Big Data Made Simple, December 17, 2018. <https://bigdatamadesimple.com/artificial-intelligence-in-healthcare-worth-36-1-billion-by-2025-report/>.
- Bresnick, Jennifer. "Top 12 Ways Artificial Intelligence Will Impact Healthcare." HealthITAnalytics, HealthITAnalytics, September 29, 2019. <https://www.healthitanalytics.com/news/top-12-ways-artificial-intelligence-will-impact-healthcare>.
- EH News Bureau. "AI, Big Data Analytics and Cyber Security: Key Drivers Transforming Life Sciences Companies." Express Healthcare, January 11, 2019. <https://www.expresshealthcare.in/healthcare-it/ai-big-data-analytics-and-cyber-security-key-drivers-transforming-life-sciences-companies/406922/>.
- "How AI Is Transforming The Future Of Healthcare Industry." By Akash Deep, April 4, 2019. <https://hackernoon.com/how-ai-is-transforming-the-future-of-healthcare-industry-16020cc18323>.
- Rousselot, Francois-Xavier. "The IE Pharma & Healthcare and the IE Big Data & AI Clubs Present: AI in Healthcare & Networking Mixer!" *The IE Pharma & Healthcare and the IE Big Data & AI Clubs Present: AI in Healthcare & Networking Mixer!* October 8, 2019.
- AI Beats Radiologists at Pneumonia Detection | Two Minute Papers #214*. Two Minute Papers, 2017. <https://www.youtube.com/watch?v=QmIM24jDESA>.
- Deep Learning and Cancer Research | Two Minute Papers #64*. Two Minute Papers, 2016. <https://www.youtube.com/watch?v=5PSWr2ovBvU>.

