

# Medicine & Machine Learning

Webinar Executive Summary  
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*Re|think the Future of Risk Assessment*  
A Munich Re North America Life Webinar Series

**NOT IF, BUT HOW**



# Medicine & Machine Learning

How can machine learning help us use the massive amounts of data available to better detect disease, discover drugs, and redefine health in the future?

Presented by Munich Re Life's Canadian Medical Director, Dr. Tim Meagher, this webinar examined the impact of machine learning on the practice of medicine.

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## Health care could be the next fintech.

Just as other businesses have embraced new technology to increase efficiencies and become more customer-friendly, so can the healthcare industry. Thanks to exponential data growth combined with powerful computing and inexpensive data storage, fundamental changes are coming to healthcare.

Huge amounts of data are arriving from new sources and doctors are being trained to work with it.

It is estimated that healthcare is now producing more data than both insurance and financial industries combined. That's because there are new data sources producing mountains of information, such as:



**Digitized images**



**Bio sensors**  
i.e.: wearables



**Electronic health records**



**Genome sequencing**

With the amount of medical information doubling every two years, it becomes impossible for a physician, whether generalist or specialist, to be able to manually consolidate all the data. Medical schools are adapting to this new reality and digitizing their classroom lectures and textbooks. Today's students are taught how to search large datasets for information and how to assess validity and reliability. Many schools are introducing medical students to data science and the physicians of the future are expected to understand the role of artificial intelligence in the practice of medicine.



## Machine learning is needed to process all this data.

Machine learning, a type of artificial intelligence, uses deep neural networks to “learn” by processing vast amounts of data. In some studies<sup>1-3</sup>, machine learning has been shown to equal or exceed the doctors’ abilities when it comes to detecting cancer, pneumonia, and eye problems. There lies exciting possibilities of using machine learning to advance medical practice. Deep-learning has catalyzed the development of new drugs. Use of multiple data sources can redefine what it means to be healthy. The collaborations between Big Tech and medical academia are enabling innovations like never before and changing the way we practice medical science.

## The challenges are significant but quite possibly, worth it.

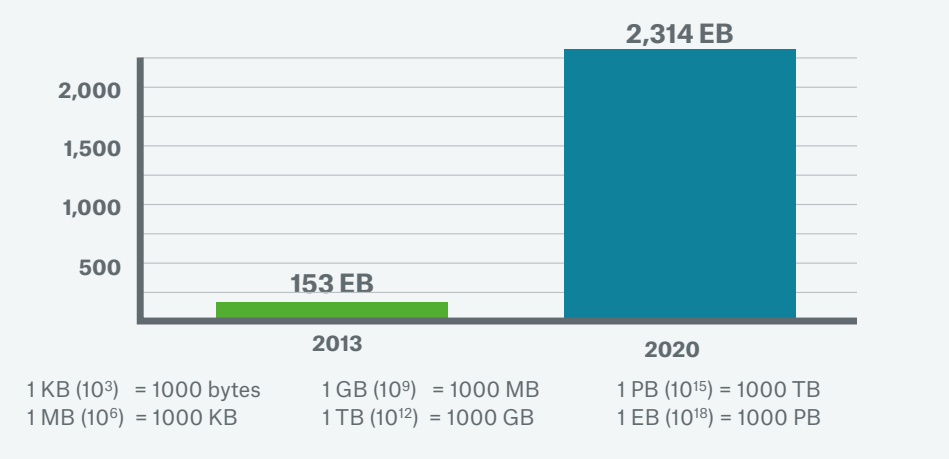
Most studies on machine learning in the context of medical practice have been in an artificial setting but contain the potential of practical applicability to real-life situations. It is essential to explore these opportunities that artificial intelligence provides and empower structural support that can enable research and innovation.

Machine learning in medicine is an exciting and evolving technology with endless potential to improve people’s health while providing valuable insights to the risk assessment enterprise.

### About the author

**Dr. Tim Meagher** is Vice President and Medical Director at Munich Re, Canada (Life). He is responsible for our team of medical consultants and for incorporating medical knowledge and progress into all aspects of the underwriting process as it applies to life, critical illness and disability insurance. Dr. Meagher also supports innovation initiatives related to medicine.

Health data amount worldwide



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References

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<sup>2</sup>Wang et al. ChestX-ray8: Hospital-scale Chest X-ray Database and Benchmarks on Weakly-Supervised Classification and Localization of Common Thorax Diseases. <https://www.cc.nih.gov/drd/summers.html>  
<sup>3</sup>De Fauw, J. et al. Clinically applicable deep learning for diagnosis and referral in retinal disease. *Nat. Med.* 24, 1342-1350 (2018).