BIGDATA USED IN HEALTH CARE ENTERPRISE

Introduction

- A healthcare enterprise has different facilities and systems that are used for processing patient data.
- The application of big data analytics in healthcare has a lot of positive and also life-saving outcomes.
- Big data refers to the vast quantities of information created by the digitization of everything, that gets consolidated and analyzed by specific technologies.
- Applied to healthcare, it will use specific health data of a population (or of a particular individual) and potentially help to prevent epidemics, cure disease, cut down costs, etc.

Introduction

- For years gathering huge amounts of data for medical use has been costly and time-consuming.
- With today's always-improving technologies, it becomes easier not only to collect such data but also to convert it into relevant critical insights.
- Purpose of healthcare data analytics:
  - Using data-driven findings to predict and solve a problem before it is too late.
  - Also assess methods and treatments faster.
  - Keep better track of inventory.
  - Involve patients more in their own health and empower them with the tools to do so.

Introduction

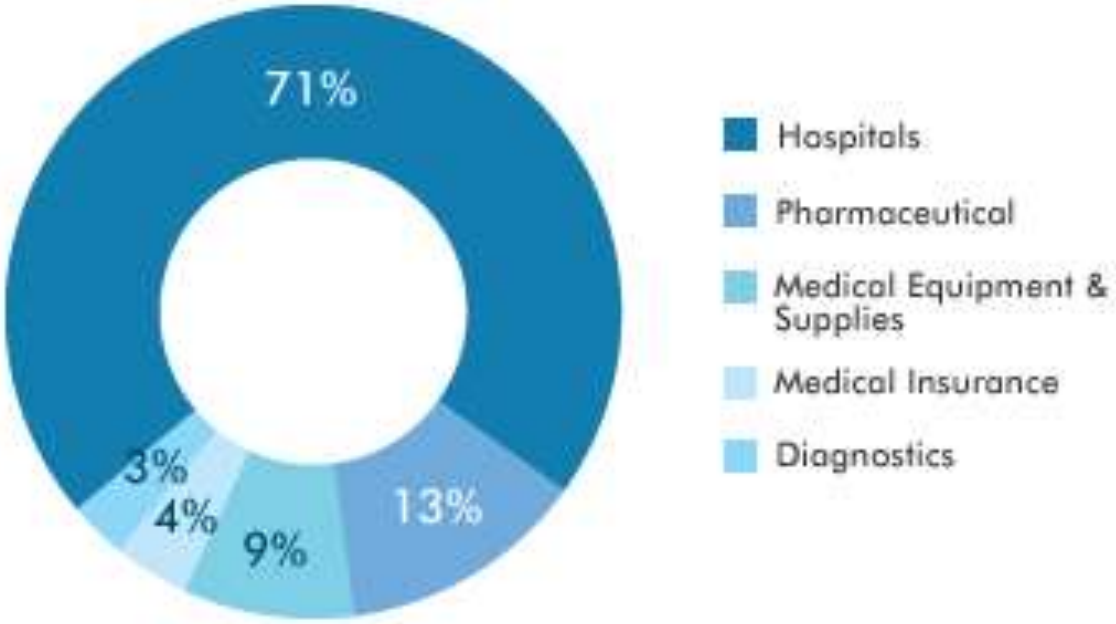

fig 1:Drivers of analytics in Healthcare

Existing System

- Apollo Hospitals was established in 1983 by Dr. Prathap C Reddy, renowned as the architect of modern healthcare in India.
- Apollo Hospitals has emerged as Asia's foremost integrated healthcare services provider and has a robust presence across the healthcare ecosystem.
- Initially patient records were manual, Apollo used traditional methods of managing hospital supplies and medicines.
- Doctors too relied upon diagnostic tests and patient treatment.

Existing System

- Apollo has implemented big data analytics for predicting infection risks for better infection control.
- The diagnosis pattern of diseases has been analyzed for predicting and prescribing patterns to look at how to prevent and control hospital acquired infections.
- Importantly, predicting disease risk is just one part of ensuring effective healthcare delivery for hospitals, the other part being operational efficiency and service excellence.

Role of Big Data

- The health industry sector has been confronted by the need to manage the data being produced by various sources.
- In 2018, Apollo hospitals adopted IBM Watson which helped physicians use big data analytics tools and make data driven health care decisions.
- Big Data increases the ability of the healthcare sectors to:

1. Maintain Electronic Health Records
2. Cure Diseases
3. Real-Time Alerting
4. Prevent Human Errors

Role of Big Data

- **Monitoring of Patient Vitals:** Various hospitals use Hadoop-based components in the Hadoop Distributed File System (HDFS), including HBase, Hive, Spark to convert the huge amount of unstructured data generated by sensors.
- **Treatment of Cancer:** The Hadoop technology MapReduce facilitates the mapping of three billion DNA base pairs to determine the appropriate cancer treatment for each particular patient.
- **Prevention and Detection of Frauds:** With Hadoop, companies use applications based on a prediction model to identify those committing fraud via data regarding their previous health claims, voice recordings, wages and demographics

Allied technologies

- Machine learning is a well-established technique in a wide range of applications and has been broadly studied for its capacities in prediction of diseases.
- Machine learning together with big data analytics help enhance patient care.
- Big data analytics along with the Internet of Things (IoT), is revolutionizing the way one can track various user statistics and vitals. By using wearables embedded with IoT, physicians can keep track of patients' health more effectively

Efficiency

- Big Data is an exciting technology with the potential to uncover hidden patterns and find better and more effective solutions to many problems.
- Big Data analytics makes it possible to process huge amounts of data.
- Availability of large amounts of data leads to better analytics as compared to that in traditional data processing.
- Better insights.

References

[1] MAPR, Healthcare and life science use cases, https://mapr.com/solutions/industry/healthcare-and-lifescienceuse-cases/, 2018.

[2]J. Sun and C. K. Reddy, Big data analytics for healthcare, in Proc. 19th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2013, pp. 1525– 1525

[3] https://www.datapine.com/blog/big-data-examples-in-healthcare/

[4]https://www.dynamiccio.com/apollo-hospitals-goes-for-mix-of-ai-big-data-and-cognitive-to-predict-disease-risks/