Analytics For Hospitals

Health-Care Data

Introduction

The introduction of Data Analytics in healthcare will allow to use new technologies both in treatment of patients and health management.The research is based on a critical analysis of the literature, as well as the presentation of selected results of direct research on the use of Data Analytics in medical facilities. The direct research was carried out based on research questionnaire and conducted on a sample of 217 medical facilities in Poland. Literature studies have shown that the use of Data Analytics can bring many benefits to medical facilities, while direct research has shown that medical facilities in Poland are moving towards data-based healthcare because they use structured and unstructured data, reach for analytics in the administrative, business and clinical area. The research positively confirmed that medical facilities are working on both structural data and unstructured data.The following kinds and sources of data can be distinguished: from databases, transaction data, unstructured content of emails and documents, data from devices and sensors. However, the use of data from social media is lower as in their activity they reach for analytics, not only in the administrative and business but also in the clinical area. It clearly shows that the decisions made in medical facilities are highly data-driven. The results of the study confirm what has been analyzed in the literature that medical facilities are moving towards data-based healthcare, together with its benefits.

Literature Review

The applications of descriptive, predictive, and prescriptive analytical techniques when using data offer opportunities to enhance the quality of various aspects of healthcare

a) Medical diagnosis

A data-driven diagnosis may detect diseases at an early stage and reduce complications during the treatment (Gu et al. 2017; Raghupathi and Raghupathi 2014).

b) Community healthcare

Authorities may take preventive steps against the predicted risks of chronic disease among a population (Lin et al. 2017) and contagious disease outbreaks (Antoine-Moussiaux et al. 2019).

c) Hospital monitoring

Real-time monitoring of hospitals can help government authorities ensure optimal service quality (Archenaa and Anita 2015).

d) Patient care

Customised patient care facilitated by BDA has the potential to provide rapid relief (Salomi and Balamurugan 2016) and reduce readmission rates in hospitals (Gowsalya, Krushitha, and Valliyammai 2014).

Challenges

1. Capturing Accurate Data

Health care data is assembled from various sources and in different formats, such as structured data, photographs, videos, paper, digital, multimedia, and so on. Capturing data that is clean, accurate, comprehensive, and formatted precisely for use in numerous frameworks is a real challenge for organizations.

The Right Solution

Predictive analytics can create patient journey dashboards and disease trajectories that can lead to effective, and result-driven healthcare. It improves treatment delivery, cuts costs, improves efficiencies, and so on. To achieve this, make sure you have access to clean, scaled, formatted, and quality data from external as well as internal resources. Providers can improve their data capture schedules by organizing important data types for their specific projects to ensure that data is meaningful for downstream analytics.

2. Fragmented Patient Care

As we mentioned above that most of the data received from various sources is unstructured and undiscovered, making EHR systems more ingenious and interoperable is another challenge. It's pivotal to secure the information of patients, staff, billing, and performance.
Providers must have a clear perspective that which data needs a manual update, and which one needs an automatic update, to avoid downtime of end-users and harming the quality of the dataset.

The Right Solution

To drive reliable experiences, AI and ML algorithms need credible information without duplications and mistakes. This helps specialists to get real-time predicted data that seems relevant to the patient's health history. And, based on that the right treatment is prescribed to them.

3. Data Privacy & Security

The HIPAA Security Rule incorporates a list of specialized security for organizations storing protected health information (PHI), including authentication protocols, transmission security, controls over access, auditing, and so on.
Many organizations secure their data with security procedures such as up-to-date antivirus, encrypting sensitive data, multi-factor authentication, but even the most secured data can be taken down due to complicated constraints on their access to data or software.

The Right Solution

Cloud data lakes are easy ways for healthcare organizations to run analytics against data from various sources. The HIPAA even notices a few security, which organizations must follow to guarantee privacy & security. An appropriate equilibrium is required between addressing data privacy and using patient data for creation examination.

4. Data Visualization

These days data often needs to be visually presented in the form of interactive graphs or charts to be impactful and understood. And, we know it's quite frustrating and time-consuming to drag information from multiple areas and put it into a reporting tool.

The Right Solution

Data visualization acquires the main takeaways in the health industry into focus, helps to identify patterns as well as correlations, and makes data analysis more relevant. For example, data visualizations include interactive infographic dashboards, bar charts, pie charts, heat maps, and histograms, all of which have their particular uses to represent ideas and data.

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