

LITERATURE SURVEY

1. Healthcare Sectors & Data Analytics

Data analytics refers to the process and practice of analysing data to answer questions, extract insights, and identify trends. This term also includes the way of how this data is gathered, cleaned and summarized for use and finally the processing of data to support data analytics and predictive modelling. (Janice Hammond,2015)

In the hospital healthcare analysis, the data is used to predict the Length Of Stay for each patient for resource allocation and better functioning.

1.1Data analytics

Data is ubiquitous. With the right skills, data can allow you to enact systemic change for social good. There are four types of analytics you can leverage depending on the data you have and the type of knowledge you'd like to gain. (Janice Hammond,2015)

1.Descriptive analytics 3. Predictive analytics

2. Diagnostic analytics 4. Prescriptive analytics

1.2Predictive analytics

Predictive analytics relies on historical data, past trends, and assumptions to answer questions about what will happen in the future.

1.2.1Data collection, storage management and processing

Before collecting the data for analysis, questions need to be asked on what data to be collected, where the data will be available, will the data be accessible and more. After completing this planning phase, we need to collect the data and prepare them for the analysis.

- Understand how data is generated and collected
- Make sure data is unbiased and credible

One of the most important elements in dealing with and managing data is to know where and how this data will be stored once when it is collected. There are a number of different

approaches, the major choices being flat files, traditional databases and more based on the size and type of data we are dealing with.

The processing of data includes transforming data, maintaining data integrity, data cleaning, summarization and verifying and reporting on cleaning results.

1.2.2 Role of predictive analysis in healthcare

Healthcare prediction is another data analytics method focusing on technique that uses patient medical history to evaluate all the potential health risks and predict a future medical treatment in advance (LexisNexis 2015). It supports healthcare sectors to achieve a high level of effective overall care and preventive care, as predictive systems' results allow treatments and actions to be taken (Conley et al 2008).

The technology era has added significant value to the healthcare decision support system, since decision making systems in healthcare care sectors can be enhanced by focusing on patient diagnoses, behaviour, and prevention in order to reach a high level of care and improve healthcare economics (Cannon & Tanner 2007).

1.2.3 Prediction of Patient's Length of Stay (LOS)

LOS is defined as the time between hospital admission and discharge measured in days. Predicting the LOS is beneficial from different aspects in terms of the patient medical plan and family, the hospital, and the insurance companies. The medical team can take accurate medical decisions and design an appropriate medical plan that includes room and bed allocation for the patient if they know their LOS in advance.

Predictive analytics can assist to avoid and reduce inaccurate prediction costs plus time for the reason that it makes the data sourcing cost lower by specifying the desired and necessary data only, since the data is simplified, standardized and exists in historical clinical databases. (Bradley & Kaplan 2010)