Big Data Analysis
Revolutionizing Healthcare Industry
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Introduction

A lot of transformations are happening in the healthcare industry today. Payers, providers and customers have changed the way business was being done until recently.

Today, the Healthcare sector generates huge amounts of data through record keeping, compliance and regulatory requirements and patient care. A large part of this data are Electronic Health Records (EHR).

In 2012, worldwide digital healthcare data was estimated to be equal to 500 petabytes. Currently, the volume of healthcare data has reached 150 exabytes globally. At projected growth rates, the volume of healthcare data will soon be at the zettabyte and yottabyte scale.

Studies reveal that in 2015, 64% of physicians used electronic health records (EHR), successfully exchanging messages with patients, which is an increase of 50% than in 2013. By 2017, 90% of physicians turn to use clinical electronic tools.

“Big Data” in healthcare is the massive quantity of data with variety, velocity and veracity which is necessary for understanding the ways to improve health care delivery.

The latest trends in healthcare point towards digitalizing the industry, with new challenges in tow

Physicians across US are starting to feel the impact of CMS imposed regulations - one of which is the mandatory use of EHR technology. Non-compliance results in Medicare fee reduction.

Patient centered care is the new motto of the healthcare industry, which is opening a scenario where patients begin to shop for healthcare like they do for any other commodity. So it is essential for Medicare providers to engage with patients outside healthcare centers, through various mediums.

Use of wearable tracking devices to monitor physical activity, sleep patterns, calorie consumption, etc. of patients is becoming widely used.

There is an increased demand for data to make viable decisions and to guide the industry. Enterprise Data warehousing is becoming a useful trend when it comes to real-time data analysis.

Big Data Analytics is the key to new possibilities in the healthcare industry, giving insights to previously unknown clinical facts and figures.

For years, physicians had relied upon their judgement to take treatment decisions. Currently, the trend has shifted to “evidence based medicine” which involves systematically and continuously reviewing clinical data before decision making. Predictive Analysis for analyzing electronic health records is already used by some of the industry leaders, aiding in early diagnosis and reducing mortality rate from heart ailments.

1. Watson Health Data
2. 2015 National Electronic Health Record Survey (NEHRS)
To take effective and feasible decisions regarding treatment plans and patient care, relevant data needs to be analyzed. With huge volumes of data available, advanced analytics capabilities are required to get optimized results.

With access to the right information in the data network regarding one’s health condition and the best treatment plans, individual patients can take the most cost effective decisions regarding their healthcare. Business decisions are made by industry personnel, considering cost control methods.

Access to the right socio economic data will assist in providing patient centered care for each and every individual, and continuous care in and out of the clinic.

According to studies by Gartner, Big Data Analytics is sure to be much sought after in the coming years, the technology already shifting from an idea to standard practices.

In the coming years, the industry’s priority will shift to three focus areas, which will need advanced data analytics techniques:

- Enhanced Decision Making
- Cost Control & Transparency
- Holistic Patient Centered Approach

**Revolutionizing the Healthcare Industry**

BDA will enhance clinical decision making, making patient care more effective

- Clinical decision support is one of the primary uses of BDA in healthcare
  - Early detection of the condition by analyzing symptoms
  - Manage specific individual/population health and easy detection of healthcare related frauds
  - Treatment outcomes, side effects to drugs, etc. can be found out through predictive techniques.

**Cost Control and Transparency – Top concerns of providers and customers**

With customers gaining more insights on healthcare costs, providers must be well aware of the patients’ cost concerns.

Financials and health care policies can gain insights through analyzing and integrating performance data available from hospitals, general population surveys, etc.

Predictive Analysis techniques are used at the point of care for specific patients/population based on various factors like age and socio economic factors for deducing cost specific outcomes.

Prescriptive Analytics can assist in Enterprise Warehousing by connecting different data sets like Revenue Cycle, Financials, Costing and Supply Chain. This assists in decision making from the business perspective of the industry.

Patients have the complete freedom to choose between effective treatment plans and various healthcare providers when they have the cost transparency of all available choices. BDA can pave way to patient satisfaction by favoring their decision making.

**Care Deliverance through a Holistic Patient Centered Approach**

An all-comprising and accessible patient database with organized data is the next big leap.
Wellness management, physical and mental health, and customized care for all is possible through integration of all the data for specific patients and applying prescriptive analysis.

All individuals are flagged under registries which are used for specific case studies as well as population health surveys. The registries should be continuously updated by including data from lab reports, pharmacy, and clinical observations of each and every individual. This in turn gives insights into following the best possible care deliverance methods to customers.

Payers, providers, doctors, hospitals, healthcare workers and members collaborate to learn and work towards providing a risk free and healthy lifestyle.

Analytics is applied at all points to provide quality service, individual patient care and financial aid, and monitor population health.

**Predictive and prescriptive analysis of real time issues – Solutions to previously overlooked situations**

When we apply predictive and prescriptive analysis on real time issues, we find solutions for situations previously overlooked. To bring the much needed and desired change in the healthcare industry, predictive and prescriptive analysis must be data driven as well as evidence based.

Socio economic factors have a notable impact on an individual’s health. Predicting an individual’s or population’s capability to access care services, compliance to follow medication, etc. are possible via Predictive Analysis. This enables healthcare providers like hospitals to provide services outside of their typical care deliverance methods.

Leveraging the case studies of patients treated for similar conditions help in predicting the outcome of a treatment plan or surgery to treat a specific patient. Predictive Analysis is applied to such scenarios to get desired results.

Hospital readmission rates of elders or terminally ill patients, accident admission rates in a hospital, epidemics progression rates in a population, individual disease progression rates, etc. are some of the possible outcomes of Predictive Analysis.

Prescriptive analysis is more of an “integrated prediction” that is the essence of evidence based medicine. From previous medical records of an individual, it is easier to find the outcomes like drug reactions, response to external stimuli, recovery time of a long term patient, etc. which play a key role in patient care.

Most analysis of financial data, including profit and expenditure of an organization, cost of treatment and care delivery, salary of health personnel, supply chain data, etc. can be analyzed through Prescriptive Analysis, to find the most cost effective and cost transparent business management methods.

**Things to look at**

Before bringing BDA into play in healthcare, there are a few things to look at:

- Healthcare industry is very conservative. Bringing changes outside existing protocols is somewhat tedious.
- Even today, many of the healthcare providers are clueless about IT driven endeavors that can be effectively used in the medical field. There should at least be an analytics driven clinical workflow to work on.
- The framework for measuring data driven medicare methods is still incomplete. Healthcare data processes across the globe are inconsistent. Analysis is possible only with the right data.
- Making analytical use of data needs content harmonization. Healthcare organizations need to at least have data warehouses, so that the content can be systematically used.
- Health care data is very personal. A large number of patients will ask for data privacy and protection which must be assured by the healthcare organizations before using it for BDA.
- The continuous and effective use of Big Data requires industrial level management, infrastructure requirements for analysis as well as a bigger scale investment.
How UST Global can help

Bringing out the best solutions for client satisfaction is our primary aim

At UST Global, we have the best ideas, best technology and an expert team to find the best solutions.

Best Ideas

Bringing together healthcare and Big Data Analytics with best suited ideas and methods

We make new advances in BDA through research and development

Our result oriented BDA ecosystem focuses on the following processes:

Data Division - Based on data type, structure and modal

Big Data Management - Defining lifecycle, transformation, curing and archiving

BDA and Tools - Target users, presentation and visualization. Focus on applications.

Infrastructure - Big Data infrastructure with storage and computational capacities, sensor networks and operational capabilities

Security - Data security at storage level, processing level and transport level

Best Technology

A dedicated team of technologists who are experts in Data mining, integration and analysis

Use the best suited technology platforms for Data Analysis and present the best solution to the client

We apply BDA to solve clinical, financial and social issues in the Healthcare Industry

Technical Solution 1

- Take initiative to work with the best health care providers across the globe and set up protocols for measuring data requirements.
- Reduce the inconsistency in data processing.

Technical Solution 2

- Encourage the use of Electronic health records. Medical records maintained by physicians and on the hospital floor can be effectively used to reflect on patient billings and insurance claims. This helps in monitoring the health care provider’s cost and expenses as well as monitoring Medicare claims of patients through BDA.

Technical Solution 3

- Ensure proper documentation and storage of data. Work with the healthcare providers to set up data warehouses that can store Big Data, both historical and real-time.

Operational Solutions

- Healthcare workforce management can effectively use BDA to measure operational efficiency. Analysts can mine healthcare data to derive strategies to increase productivity and profitability. Isolating and reviewing this data gives information on the right centers to be focused on.

Regulatory Requirements Solutions

- Providing data privacy and protection to patients whose data is used for analytical purposes. Ensure that the system follows HIPAA for US clients, and similar regulatory acts are followed for other global clients.

Strategic Solutions

- Data sources are routinely classified and checked for repetitions. The right data will give the right solution.
ABOUT UST GLOBAL®

UST Global® is a fast-growing digital technology company that provides advanced computing and digital services to large private and public enterprises around the world. Driven by a larger purpose of Transforming Lives and the philosophy of “fewer Clients, more Attention”, we bring in the entrepreneurial spirit that seeks the fastest path to value in today’s digital economy. Our innovative technology services and pioneering social programs make us stand apart.

UST Global is headquartered in Aliso Viejo, California and operates in 21 countries. Our clients include Fortune 500 companies in Banking and Financial Services, Healthcare, Insurance, Retail, High Technology, Manufacturing, Shipping, and Telecom. UST Global believes in building long-lasting, strategic business relationships through agile and client-centric global engagement models that combine local experts and resources with cost, scale, and quality advantages of global operations.

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