Healthcare Analytics for Medical Management

Paves the way to improve clinical care and produce better outcomes

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Abstract

Healthcare organizations need a powerful system that can help them maintain a healthy environment which involves constantly striving to improve patient care by delivering the right kind of treatment. To achieve this Healthcare Analytics is used to manage huge healthcare data systematically, that is collected electronically, the purpose being - improve patient healthcare, reduce cost, and give top priority to save the patient's life by taking necessary action at the right time by connecting with the concerned physician who can assure proper treatment. Healthcare Analytics also referred to as big data analytics - is not only about managing massive and ever-growing data. It's also about extracting insights from patterns found in the healthcare database. Analytics dives deep to explore meaning in the real-time data; make predictions about future which can pave the way to the path of success. Implementing Healthcare Analytics wisely can change the way healthcare sectors operate, meaning it can only lead to advantageous direction - like it can help healthcare providers reduce fraud, waste and abuse which in turn can drive to business growth, improve productivity, improve patient care, cut down medical expenses, transparency in billing, reduce unnecessary medical tests and much more than you can imagine. Most importantly using analytics can improve workflow across healthcare sectors. Healthcare industry to reach great heights needs to enforce Healthcare Analytics to the huge and ever-flowing database to produce the best consequences.

Keywords — *Healthcare Analytics for medical management, improve patient care, big data analytics, insights from patterns, healthcare database, healthcare providers, implementing Healthcare Analytics, healthcare sectors.*
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I. INTRODUCTION

Healthcare Analytics is the next big thing for sure. This application includes the technologies and skills needed for growth of healthcare sectors, it also opens the way to tap into valuable patterns from vast patient data collected from electronic health records (EHRs), helps in improving clinical care, cut the cost, aid in making wise healthcare decisions, help make predictions and aim at improving patients experience and deliver better outcomes across the healthcare industries and much more. Healthcare Analytics, when used with data visualization tools can help provide real-time information that aims at offering insights into hospital working system, patient records and other details associated with hospital management, which in turn can help in delivering efficient medical outcomes.

Applying Healthcare Analytics can help uncover valuable insights and enhance business outcomes.

II. HOW HEALTHCARE ANALYTICS IS VALUE DRIVEN?

The business of Healthcare organizations is booming in leaps and bounds across the globe, with its growth the data is also increasing and the challenges also grow which includes evolving cost, misuse of drugs, low quality medical care, misuse of data, fraudulent activities, poor medical service and other issues can grip the Healthcare industry.

Using analytics tools and techniques can help extract value based information from complex data which can be helpful to gain insight into useful data providing opportunity to physicians and other healthcare providers to make better healthcare decisions. For example using analytics can cut short fraudulent billing activities, take care of readmission rates and help in efficient hospital management. Using various analytics tools like big data analytics, data mining, and text mining can empower the healthcare providers to act more responsibly and professionally for instance - predict the disease before time, make correct diagnosis, give the correct treatment, most importantly bring down the cost and improve overall healthcare service. Using Healthcare Analytics for medical management is the only way to extract valuable data and use it efficiently to provide productive and satisfactory services to the patient population. To be more precise, Healthcare Analytics is value driven.

Healthcare Analytics can offer higher outcomes and healthier patient satisfaction at lower costs.

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III. HOW HEALTHCARE ORGANIZATIONS ARE USING ANALYTICS TO IMPROVE THEIR SERVICES TO THE PATIENT POPULATION?

Healthcare organizations using analytics model to convert big data has taken a one step ahead in the business, for it has helped them clearly see the advantages of using Healthcare Analytics, especially in the areas wherein the patient might need immediate surgery or emergency service to save his or her life. Analytics has helped providers predict the future outcome based on the patients' past and present data, act quickly, effectively and deliver quality service. In the sense it allows the doctors or other health care providers to predict the future happenings and this helps them in making better decisions and provides proper service to the patient.

Healthcare Analytics provides solutions to improve quality of clinical care by providing access to value-based patient data.

IV. USES OF HEALTHCARE ANALYTICS

☞ Improved Patients outcomes

Healthcare Analytics known as clinical analytics is the process of deriving valuable facts from the existing patterns in the healthcare data, this process imparts opportunity to get insight into real time data that can be useful to make better healthcare decisions, offer quality and timely service to the patient, leading to the route of safety. Healthcare Analytics can help practitioners in identifying patients who are at high - risk and this in turn can help them to give right care at right time leading to improved patient outcomes.

☞ Improves Patients care

In present times healthcare sectors face increased challenge to improve patient care. This challenge can be taken care of by using Healthcare Analytics to its full potential as it creates opportunities for healthcare sectors to improve their services by giving deep insight into value-based data, better healthcare coordination also helps analyze the effective practices that can aid in cost cutting and strengthen the health of patient population. If Healthcare Analytics is applied properly it can provide positive outcome in patients' healthcare, identify people at increased risk of chronic diseases and also help in better understanding of the performance of healthcare practitioners, this implies analytics can help in continuous evaluation of the practitioners. To be literal Healthcare Analytics can provide information more efficiently and provide solutions that can help raise patient care.

☞ Drop in hospital readmissions

Healthcare Analytics is the best possible technology to be adapted that can help reduce hospital readmission by analyzing historical data; this will help analytics to predict which patients need readmission. Also frequent readmission can worsen patient's health, causing loss of confidence and most importantly might lead to financial stress. Using Healthcare Analytics decreases the need for patient's readmission to a great extent. Many healthcare organizations are using analytics to elevate patient care and decrease readmission. As analytics use patient's historical data, such as - frequency of hospital visits, history of drug use, severity of the health issues and frequency of hospital stay. It becomes easy to find solutions, resulting in drop in hospital readmissions.

☞ Reduces administrative expenses

Healthcare sectors feel the pinch when it comes to managing administrative expenses. It is a real challenge because there's a chain of huge staff which is necessary to perform work. Most of the hospital budget is spent on the administration; to counter this hospital need to use analytics to bring down the administrative costs. With use of analytics hospitals can get access to real-time data, utilize medical codes properly and make sure reimbursements are received in time. Now days with electronic medical records it's become convenient to put a break on growing administrative cost.

☞ Predicting risk

Healthcare Analytics helps in analysing which patient is at risk for serious health issues based on medical history that includes family history for chronic disease, age, uncontrolled cholesterol levels and blood sugar levels and other factors and before the problems aggravates it helps find solutions by allocating effective resources.

V. USES OF HEALTHCARE ANALYTICS ROLE OF ADVANCED HEALTHCARE ANALYSIS IN RE-SHAPING HEALTHCARE ORGANIZATIONS

Healthcare organizations has abundant data both structured and unstructured that keeps flowing in through several sources. The challenge lies in extracting useful information from this massive data which can aid in providing right treatment to the patients and provide positive outcomes. Using advanced Healthcare Analytics can help achieve this goal for it helps decode different types of important data which might give insight into healthcare trends and use this to cure patients or cut down the risk of disease.

Healthcare Analytics plays a vital role in understanding the right facts about the patient population and this is possible with the use of technologies like Electronic Health Records or EMRs which helps in determining real information from the abundant data that enters the healthcare systems through various sources and helps in making wise decisions which can lead to better clinical results for the patient.

There's a huge pressure on Healthcare organizations to produce value based results to the patients in the form of better treatment, reduction in medical care costs, increase lifespan and this can be possible only with the help from the expertise of Healthcare Analytics. Apart from providing benefits to the patients, using analytics also benefits others like - insurance companies, facility providers, government entities and various other branches associated with medical management.

If Healthcare Organizations truly utilize advanced analytics, it will aid in better access to quality data which will help the patient derive better care and better outcomes from the healthcare system.

VI. ROLE OF HEALTHCARE ANALYSIS IN MEDICAL MANAGEMENT

☞ **Patient's well-being - T**he healthcare organization that gives priority to the patient's wellbeing and works to provide excellent patient care is said to be on the right path towards success. It works like this, implementing analytics can help hospital administrators to track patient history and provide the right doctor which can result in proper patient treatment and satisfaction.

☞ **Check on financial risk** - Unpaid patient bills, underused billing, lower reimbursements and many other challenges are there, using Healthcare Analytics makes it possible to deal with the financial risk that both providers and payers face. Also there's a possibility for the healthcare systems to improve the health of the patient population and reduce cost of healthcare.

☞ **Checks on fraud and abuse** - Healthcare sectors are highly at risk for fraud, waste and abuse like it can be false diagnosis, unpaid bills, wrongful billing, false claims, unnecessary medical tests and various other wasteful practices. Implementing Healthcare Analytics makes it possible to keep a tab on fraudulent activities. Now it has become an easy task to control fraudulent incidents in healthcare organizations leading to quality patient care and less fraud, abuse and wastage.

☞ **Healthcare Reform** - analytics is the key to healthcare reforms get going, which in turn will lead to improved clinical efficiency, fee-for-value and efficient reimbursement reorganization. Using analytics will help achieve impactful outcome and goals that are demanded by the healthcare reform.

☞ **Quick coordination** - in present times there's heavy competition amongst healthcare industries to excel in every department whether providing patient care at affordable rates or giving timely treatment by quick coordination and other expectations. Achieving all this can be possible by utilizing analytics. When it comes to quick coordination it is very important part to run a successful business and analytics helps deliver proper coordination especially helpful in emergency situations. In times when a patient might need immediate response for survival, analytics can be helpful in making quick coordination strategies which can save a patient's life.

☞ **Improved customer service** - Healthcare Analytics promotes customer service. Satisfactory customer care in any organization is very important; in fact the success of healthcare sector also depends upon the kind of service they provide to the patients. Healthcare Analytics can provide strategies for excellent customer service to the patient's satisfaction which can improve their health and lead to less readmissions in future. Usage of Healthcare Analytics in several other healthcare sectors can empower healthcare providers to provide excellent patient care, speed up the healing process and improve several other areas concerned with the medical management.

☞ **Advantage for insurance companies** - Insurance companies can operate smoothly with Healthcare Analytics as it helps them tracking clients easier, their claims, premiums, detect open claims and offers better price for services they provide.

VII. CHALLENGES INVOLVED IN EXECUTING HEALTH ANALYTICS

☞ It needs a strategic planning and proper management to extract advantages out of analytics. Firstly it is very important to understand that implementing analytics into healthcare sectors is a big challenge, you need to make sure that the data you want to gather is accurate, so that it can be used in numerous systems. Also ensure the Electronic Health Records (EHR) used is optimized, so as to avoid data seizure problems.

☞ One more major challenge to enforce Healthcare Analytics in healthcare industry is insufficient storage space. There's a big budget involved in storing massive data that

keeps flowing from various sources and it's difficult to manage such huge data.

☞ Another serious concern when enforcing Healthcare Analytics is data security. In healthcare industry protecting data is necessary and this can be achieved by keeping up with HIPAA security. You need latest anti-virus software, encrypt data, set-up firewalls and make sure to use multi-factor authentication.

The journey to reform the healthcare system is challenging. By using Healthcare Analytics, both providers and patients can override the challenges and aim for the best outcomes.

VIII. BENEFITS OF USING HEALTHCARE ANALYTICS

☞ To uncover the useful data from the huge collection of big data which can be used for the benefits of - patients, physicians and healthcare sectors.

☞ One of the most important benefits of using Healthcare Analytics is that it enhances quality of clinical care by providing access to accurate and reliable patient data to the healthcare organizations.

☞ Using Healthcare Analytics properly can expose the reasons behind poor patient population response or low response to outreach.

☞ Analytics interpret data in such a way that can further strengthen and improve patient's outcomes.

☞ Implementing Healthcare Analytics can provide solutions that are reliable, accurate, reasonable cost and value-driven.

☞ Improves healthcare working environment by fastening data-access processes.

☞ Enhances profits and promotes market share by enhancing patient care and value.

IX. FUTURE OF HEALTHCARE ANALYTICS

Healthcare Analytics is all about converting data into actions through analysis and deep understanding in the reference of the healthcare decision making and solving problems, the key objective is to achieve insight for making better fact-based healthcare decisions.

Applying Healthcare Analytics can create a value-driven healthcare environment. Analytics enables the healthcare sectors to collect more and more valuable data about the patients, which can be helpful in improving services to the patients. The use of analytics is so profitable to the organizations that new technologies that utilize analytics are being

developed with an aim to make healthcare experience more transparent and value-driven.

Implementing Healthcare Analytics with other high-end technologies can make the whole process of healthcare convenient for both patients and the doctors, for it helps in quick identification of possible disease outbreak, helps in taking precautions by ensuring availability of drugs, helps in identifying patients at risk for readmission and make arrangements for better treatment post discharge thus leading to improved global healthcare. What is exciting about the use of Healthcare Analytics is that it's not limited to only getting access and using information to understand the patient's history and improve patient's healthcare, it also uses the information to predict the future happenings and find solutions to achieve best results.

The future of Healthcare Analytics is splendid for it will only contribute to quality patient care, improve clinical outcomes and strengthen business value.

X. CONCLUSION

It is true that Healthcare Analytics indeed has a massive potential to raise the quality of working of healthcare sectors in the sense it will help fix medical errors, enhance patient safety, keep a watch on patient satisfaction, reduce medical expenses, monitor practitioners performance and promote healthier lifestyle choices. There are many more other advantages associated with the usage of Healthcare Analytics for instance, it is necessary to mention that it can reduce routine doctor's visits by regularly tracking one's health status, the patient care may have the dual advantage not only from the expert doctors but also in consultation with the decision support software. Furthermore, it is valid to point that Healthcare Analytics can easily detect fraud, waste and abuse of database in the healthcare sectors. We have seen the merits of implementing Healthcare analytics in medical management. Although the impact of analytics won't take place overnight, it's possible to improve healthcare working system if analytics are applied correctly and seriously if success is the desired result.

It seems easier talking about implementing Healthcare Analytics in healthcare industries to achieve positive changes there are some barriers that can prove to be challenging and require enormous efforts to overcome these challenges. Having said that, Healthcare Analytics is a set of support technologies that already made its importance felt in the healthcare industry, by providing innumerable benefits to physicians, health care providers, pharmacists, healthcare policy providers and patient population and the benefits are huge there's no stopping. Healthcare analysts are constantly at work to develop more and more top - class tools and models that can help gain useful insights and improve

the healthcare system in all directions. Along with enhanced care and quality treatment, analytics will help the patient derive more value from the healthcare care system in the form of extended and healthy lifespan.

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