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Under the Theme:

**Enhancing Maintenance
Through Big Data Management**

►► **Big Data Analytics for Intelligent
Healthcare Management in Saudi
Arabian MOH Facilities**

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►► Healthcare data management

Abstract

Healthcare data management has been a pressing challenge for years in Saudi Arabia specially those in rural locations, yet there's still a lot of work to be done in order to make healthcare data integration a fluent process. Healthcare improvement initiatives resulted in the introduction of electronic health records (EHRs) and electronic medical records (EMRs), health information exchanges (HIEs), numerous patient databases, continuity of care documents (CCDs), and much more.

On the one hand, all of the above can help clinicians and care providers handle data in a more efficient and convenient way. On the other hand, the amount of information has grown exponentially and has driven a need for analytical, clinical, and business intelligence tools to convert the data into meaningful information. The latest can be used to improve clinical, operational, and financial performance.

►► Introduction

Data management in Saudi Arabia

Data management in Saudi Arabia's healthcare is a complex process specially at the initiative step. It is composed of several key ingredients such as data governance, data integration, data enrichment, data storage, and data analysis. Data governance is a critical element as it defines the key data shared among multiple IT systems used by healthcare organizations in Saudi Arabia. The main information includes dimensions, terminology, ontology, and appropriate standards of the data to be managed. Data governance covers master data management, which ties master data in a single and reliable source of data to be used for care improvement and patient safety.

►► Master data management



Data integration is a step in data management

Data integration process can be further subdivided into several steps:

- Data aggregation from multiple sources and data cleansing to get quality data
- Data transformation in accordance with standardized formats
- Data transportation from the sources into data repositories and warehouses

►► Data enrichment



Data enrichment is the step required to prepare data for analysis performed by various healthcare quality measurement tools. It is based on natural language processing, which allows pulling meaningful and standard discrete information out of the raw data collected across multiple healthcare IT systems.

►► Data storage



Data storage is the final step in the process. It ensures that your organization gets all the necessary data for analytics. At this step, the structured, unstructured, and semi-structured data are aggregated into appropriate mediums where it can be securely stored, easily found, and analyzed.

►► Healthcare Data Management Software the Tools to Help You with the Data

Utilizing data in profitable ways is the main challenge that the healthcare industry in Saudi Arabia must overcome. The growing volume and velocity of data demand effective and efficient tools to ensure meaningful use of huge amounts of data flowing into the healthcare organizations every day. Let us make a brief review of the healthcare solutions used for handling and analyzing data. Here are some of the tools that deal with the key areas of healthcare data domain: data collection, data management, data integration, and data analysis in healthcare.

►► Healthcare Data Collection Tools

Probably the most popular data collection tools in the healthcare industry are Enterprise Data Warehouses (EDWs). They are so popular because EDWs are designed to aggregate data from multiple sources (and systems) into a single, unified, and integrated data repository. The data is integrated within the EDW, so users can analyze the previously stated data and get more ROI from existing source systems.

►► Healthcare Data Integration Tools

As we told earlier, healthcare professionals face serious problems due to unstructured data. Despite the widespread use of electronic health records, the healthcare data integration is still a challenge in the healthcare sector. However, IT healthcare technology tools can facilitate data integration to ensure better and more meaningful data usage.

►► Healthcare Big Data Analytics Tools

Healthcare quality measurement tools help healthcare professionals turn insights into action. Hospitals and care providers adopt big data analytics and population health management technologies to meet the requirements of the new healthcare standards together with the growing demands and expectations of patients.

►► Healthcare Data Management Tools – Choosing a Right One

There is a range of tools for health data management, clinical decision support, and care coordination. The EHR market is restricted to a limited list of vendors offering certified products. On the other hand, the big data analytics market is wide, and it is not easy to pick the right tool for your needs. You have to define which tool would be the best for you, i.e., you have to know the amount of data you collect and process, and you have to know which key metrics you want to analyze.

►► Why Healthcare Data Management Is Important?

The reasons why the healthcare data should be collected, shared, and protected are quite obvious. Correct and relevant data stored and shared within a healthcare organization or between several organizations improve service delivery and accuracy of treatment. Consistent data ensure quality analysis providing information necessary to improve business processes and care provision. Utilizing healthcare data management tools allows coordinating care between various doctors and hospital departments. It also makes services cheaper as sharing of medical history makes diagnosis faster and eliminates unnecessary tests. Effective data management benefits hospitals through reducing operational costs. It eliminates manual data input and makes data storage safer and more protected.

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