Report

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According to the article by Bates D.W. &Bitton A., (2010)., "The Future of Health Information Technology in The Patient Centred Medical Home", the discussion is mainly on the electronic health records which needs a proper improvement with reduced costs and much effectiveness. The belief is about managing the clinical decision support for chronic diseases where the policy makers include medical homes in electronic health record regulations. Bates has been working on the health policy and management and he is practicing as a general internist with intermetal Medicine at Brigham. He has been working effectively on improving the clinical decision making through quality of care in the medical practice mainly. For Bitton, a graduate from Brown University, is planning towards patient centred medical home model which has impressive group of academic, business, clinical and the business concepts that improve the primary care which is important for the patients. The paper highlights the primary care to deliver high quality health records with focus on how patient centered medical homes need to work on improving the efficiency, quality and safety standards. The topic is important and relevant to the current thinking as with development, it has become important for the medical home to improve the outcomes with lower costs. It includes the health record innovations which are set in context to the reforms of payment and other patient centered care. The improvements in EHR are defined to evaluate the data particularly when we talk about the policy and financial approaches. The key points have been stated in an accurate manner where they address the different failures with measurement capabilities for improving care and exporting the data for transparency. In present time, the implications could have certain issues related to addressing care coordination with technology and working on broader goals. With the changing time, there is a possibility that the technology can help in collecting signs of congestive heart failure, with reduced costs. The methods seem to be appropriate but could focus mainly on their improvements to address the key issues of EHR. The care transition and personal health records need to be set with reduced adverse drug events and collaborative care. For the patient centred medical home implementation, the integration is of inpatient and outpatient EHR. The implications of the methods could mainly be improvement in quality and value of each patient. The records allow patients to exchange emails, with the system tracking features that follow up of abnormal test results. The accuracy and reliability are met mainly through subsequent researches where the focus is on telehealth with outcome set for chronic diseases. Here, the measurements are depending upon using modern communication with telehealth technology to monitor distance where users focus on regular preventing monitoring.The efficacy of the personalised medicine depends on the relation between the disease and the features which include the possibility of diffusion of data. It is set in order to involve the great number of groups with different skills and optimal use of data itself. The intelligent link is between the clinical and the genomics information which is a tool important for the proper communication of the information. Hence, with the personalised medicine it is possible to synthesise the new drugs for the treatment of different kinds of diseases. With the evolution of data analytics, there is a need to focus on investigations where the exploitation of extensive electronic medical record systems tends to conduct a genotype-to-phenotype approach when the study is related to human diseases. For the patients, health related data is effectively integrated and utilised with patient disease therapy and health management which can achieve unprecedented accuracy. The data is analysing through knowledge bases which are set to contain the lifetime de-identified clinical data. It includes the classification and the data hierarchy with different types of diseases which focus on SNOMED CT for more accuracy classification in the precision medicine era from the patient perspective. The data analysis model, visualisation is set in realization of smart patients who have access to their health state and they are able to acquire the tailor made individualised treatment plan. The data analysis model is set with the smart patients with mature, and consummate technologies where the smart patient has access to health state and to tailored made individualised treatment plan.

The discussion highlights about how EHR has been effective to match with improving clinical decision support, along with chronic diseases and measurement. The domains are set to define and build linkages for medical homes.The major results in caring about the research on patient and staff with effect of patient centered medical home transformation.

The main points are that EHR will help in reducing the costs and improving the quality and safety. One can evolve with commercialized record systems with respect to identifying the registry functions, clinical decisions and tools for delivery of team care.

Another article that is compared is from Dentzer S., (2010), who wrote on "One Year After the Stimulus, Will We Get Health IT Right?" She highlights mainly on the changing full blown electronic health records and how the administration is focusing on inducement of cash. The criticism is about different standards set for data collection with IT systems that can share information with each other and aggregate population level data. The payment reforms emphasize on accountability for performance that could flow from health reform and make the providers and payers more attentive.

The comparison is done with work done by Ferris N., (2010), who has been working on health information technology. According to her, the grants and the contracts under the state agencies are mainly to facilitate the exchange of health information with non-profit entities to provide technical assistance to health care providers. The major goal is to achieve the efficiency, safety and quality of health care that will reduce any health disparities and engage patients and other families. The disruptive health IT has to face issues related to security and privacy, data management and interoperability and information exchange. Here the providers also need to work with other industries for valuing of the data. IT issues are BYOD (Bring Your Own Device) where it is not possible to keep the information safely by the doctors.

Reasons of Problems

With the digital data generation and the development of the science, it is possible to focus on extracting all the new insights that comes from the different massive data sets which includes the internet business and the financial developments. The healthcare area focusses on delayed progress of big data technology where there is an increasing gap between the healthcare costs and the other outcomes. The gap is mainly in between the healthcare costs and the outcomes which are mainly due to the poor insights that comes from research and care experience. There is a need to focus on the improvement in the healthcare facilities and the outcomes of patient, and data availability, analytical capabilities for the big data in healthcare. The technology is set to match with the costs, quality and the outcomes where there are complexity issues that comes from the diversity of health-related ailments and their co-morbidities. There are sources of medical big data that works on the protocol to model, compare or benchmark the performance of different data analysis strategies. There are disruptive repercussions of the big data analytics which includes the assessment of state of science. The challenges include the evidences of the practical benefits of the big data which are scarce. There are issues with quality, inconsistency, instability with major limitations in the studies of observation, validation as well as analytical issues.

As per the analysis, there is a need to focus on improvement of data quality of the electronic health records. In the precision medicine, there are nephrology area with chronic kidney disease and their codes have not yet been assigned in the administration to claim database. Since in most cases, the injury is acute, without any dialysis, hence, the codes are not assigned which needs to be corrected. The clinical integration and utility is also an issue where the big data needs to be integrated into the clinical practices with earning substantial benefits and integration that requires a complete validation of the big data analytics. There are issues of the clinical integration and the utility which are overlooked, with solving the

challenges to fasten the applications of the big data technology in the medical sector. The focus is on improving the outcome of the patients and then reducing the resource waste in healthcare, for real value of the big data.
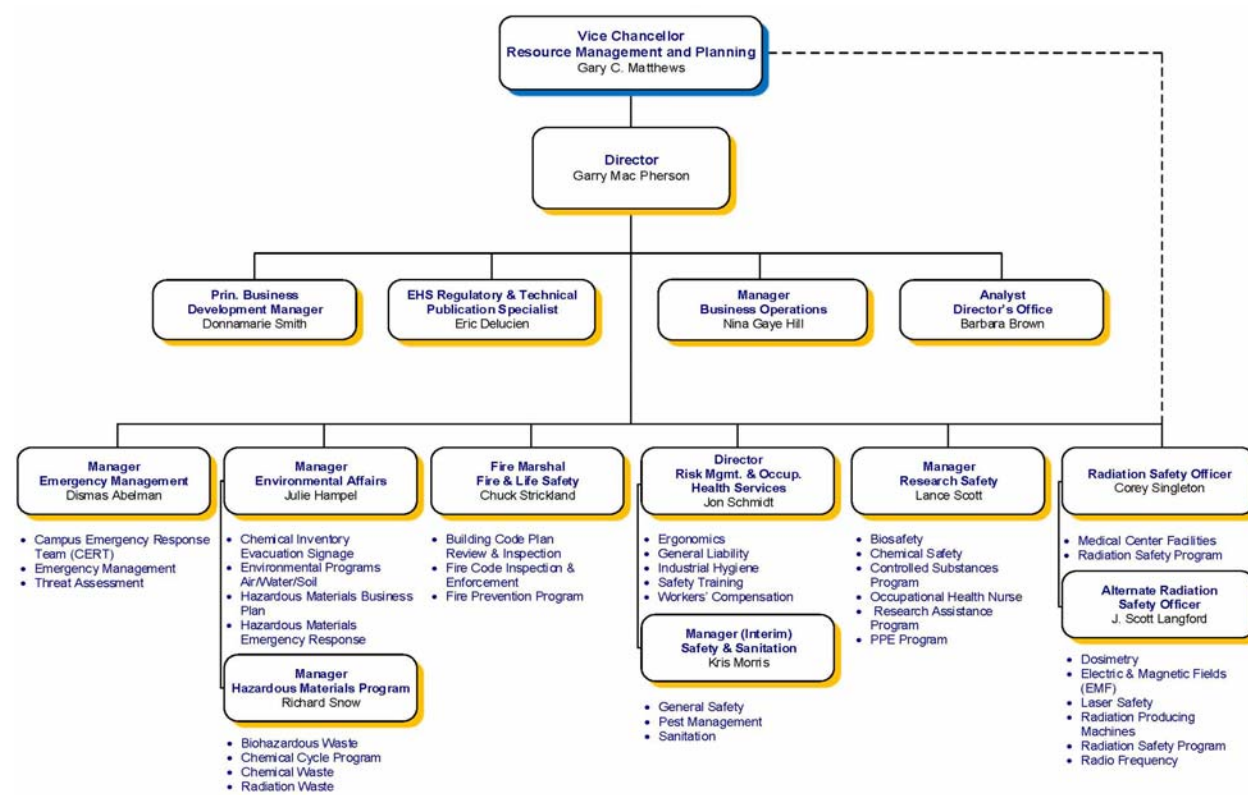
SNOMED CT offers the different analytical techniques which helps in improving on the lexical query capabilities. Here, analytical technique is based on meeting the needs of business. The consideration is about the point of care analytics, population-based analytics which will benefit the population. This includes the analysis of trend, public health standards and proper care delivery auditing and healthcare services. The research is based on matching and improving the clinical assessment and the treatment guidelines which includes the identification of trial candidates for searching of clinical knowledge. The overview is about the benefits which include patients and clinicals, decision support and point of care reporting. It can help in supporting the integration of information with the use of the other coded systems. the unlocking of the clinical data is captured by the source systems, where the example is set for services of UK NHS Summary Care Records. The services make use of the extracted details patient care records which are held in the different disparate systems. The point of care requires to include helping of clinicians remembering the preventative services, identifying the patients with proper gaps of care and risks factors. It then tends to monitor the patient compliance with treatments, clinical data to registries like cancer, stroke and the disease. The population-based analytics tend to encompass the benefits which include the populations with trend analysis, public health surveillance and care delivery audits. The efficient healthcare delivery and the service planning mainly depends on the high quality of clinical data which is scattered mainly in between the different healthcare providers through the use of clinical systems. SNOMED CT focus on population-based analytics which enables the accurate capturing of the clinical data by allowing it to be represented at the proper level. Apart from this, it supports the integration of the clinical data sources with focus on free text and mapping with the other coding systems. This would enable the powerful queries to be performed over the data, with hierarchies and the logical definitions. There is a need to detect the changes of incidence or prevalence of particular diseases, treatment, procedures which matches with the utility for population of health monitoring, predicting demand and effectively managing the resources at the enterprise and the national levels.

Solution of Problems

With the recent advancements in the higher throughput technologies, there has been system emergency which is holistic to achieve the precise modelling of the complex diseases. Many say that there are some personalised medicines in future which are going to emerge. The two-tiered health systems and personalised medicines are moving along with focus on widening the growing gap in the health systems in between the high and the low-income countries. It is seen that there is a major lag in the ability to properly generate and then analyse the big data. The transition is

manly from conventional to the personalised medicines where the generation of the cost effective and the higher throughput data, hybrid education and the multidisciplinary teams are there. The data storage and processing, integration and interpretation are for reviewing the updates of important developments in the analysis of big data and forwarding the strategies from global to personal medicine.

Considering the generalised view of the HL7 standards, there is a need to address the software developers and medical equipment manufacturers with goals of unify the ways in which information is present in medical units. There is a proper exchange and storage of information, that includes the dedicated medical sector with well defined domains that focus on the pharmacy, medical devices or the imaging. One of the effective methods used is the HL7 which is manly for the proper processing and the management of the different administrative and the clinical data patterns. It focusses on management of the patient details like admitting, discharge, transferring the patients. Some of the other domains are:

a. Handling the query or the resources

b. Scheduling a proper procedure of the medical treatment, wit results and the other clinical trials.

c. The financial standards and documents related to the medical treatment

d. Records

The consideration is about how the HL7 standards can handle the burden which relate to the passing of messages and exchange of data in between different applications.

For this, the medical applications make use of "HL7 type" which is considered to be the generalised message application for handling the events of medical with admitting patients, their transfer or the discharge. The information exchange is made completely coherent and efficient with defining the messages that include medical units as well under the character code. Hospitals and the healthcare providers have different computer systems which they use for billing and tracking the patients. In hospital, information is managed through Hospital Information System where the activities are important to be monitored and controlled that will allow a proper communication to the sub-systems like the imaging centre (RIS-Radiology Information System), financial department and human resources. One tends to enable the communication with different medical information where HL7 standards could be used to perform the exchange in data and provide information which is compatible to the surface. The exchange is also related to the doctors, resources and the documents.

The major benefits are based on information integration where the possibility is to access the information with processing them on the solutions. There is no major importance for the provider with certain software applications and it also limits the choices in acquiring the other systems.

With the changing clinical document architecture CDA, the XML based standards are specific to the structure with matching the minds and data exchange. The Patient Record Architecture is for clinical document interchanging like epacris, evolutions etc that makes it possible to integrate the information and work on compatibility through XML, HL7 RIM (Reference Information Model). CDA documents are worked upon XML with structure set under the document, section and the entity level which defines the text, images and the sound recording components.

The other method used is the DICOM standard (Digital Imaging and Communication in Medicine) which is mainly to focus on distribution, properly displaying and handling the storage of the different images which are under the medical standards of CT, MRI. They are for defining digital data which can be transferred, stored and then displayed as well. the standards are set to define the communication, where DICOM supports JPEG, compressed and uncompressed imaged. They allow the additional information which relates to the acquisition of data to store the 2D image like the patient 3d position, size of objects and the thickness with exposure parameters. One provides a support for the full storage in the medical data which includes how the patient medical data and images are acquired through using parameters which are device independent.

The third method which can considered is IHE (Integrating the Healthcare Enterprise) specifications. They are mainly for handling the stimulation with proper information that is there in the modern health records. The major objective is to handle the patient and state information that is correct, accurate and available for the medical staff as well. The challenge is to describe the platforms and the solutions which concern software application integration, with best practices cases and manuals mainly set for deployment of exiting standards. IHE tends to identify the subset of the functional components which come from the medical informatics systems with interactions through different set of transactions. Here, the actors and the transactions are mainly for specifying the abstractions which are present to define the entity for billing the performed medical procedures, examination management system, images and medical report. The transactions and interactions are between the actors who work on handling the information though standards-based messages. The integrating profiles offer the standards where the healthcare professionals and vendors make use of different communication patterns with integrating products which are effective for the real-world scenarios. DICOM and HL7 standards tend to provide with the effective means and technology for medical software development where the medical software applications are defined through informatics system to ensure that the patient and resource management is done effectively for medical centres. The software applications come from the field of imaging (PACS, Review Stations, and Reporting Schemes). There are other equipment's like the printers, imagers etc.

The objective is to focus on producing, storing, displaying and handling the processes which are for retrieving, and processing the query for the printing of medical images. DICOM works on the management of the devices and the files in the network.

PACS structure includes the medical image and acquisition of data, its storage and then displaying the subsystems which are integrated by the digital networks. They are filmed to digitize the connections in order to display the workstations with the smaller image database with storage devices. The infrastructure designing provides the framework which is for distributed imaging devices that makes it possible for the intelligent database management to work on addressing and offering the viewing, analysing the documenting of study results.

Conclusion

The evolution of the precision medicine over the years have increased by manifold, with the increase in the maintenance of the medical database on computer aided systems. The database that are stored for the patients on the systems include the complete hierarchy of the data, which the medical records and history of the patients in a depth, which would not have been possible to do manually. The storage of thee data has not been the only advance with the advancement of the computer aided system in the medical field. The Health Level 7 standards that has been used in the preparation and use of the medical data for the correlation with the other data, and finding the best fitting medicine for the patient has been evolved with the cross referring he data as well in the database, in the form of XML files, which are stored on the server, and the search for the specific criteria can be made for them. The structure of the XML has been shown above for such a file with the details that are included for the medical data.

The other form of such data fetch is used from the SNOMED CT system, which sets the complete database of the medical records for medicine, and can be used to find a specific medicine from the system suing references and search criteria, which cross reference various forms of data from the dataset to present a result set, which are specific to the criteria. The precision medicine can be used in this scenario to find the medicine for the specific genes or other such factors, and apply them in the treatment as per the needs. The example run of a search criteria and use of SNOMED CT has been shown below.

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