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Integrating EHRs using FHIR Data Models

eZintegrations™

Healthcare is one of the blooming industries in the market. It is one of the most complicated sectors in the world. It includes a wide range of organizations and stakeholders, including hospitals, clinics, physicians, patients, insurers, and policymakers. The healthcare business is crucial to economic growth and development because it promotes public health and well-being. However, the healthcare business confronts a number of obstacles, including growing prices, health disparities, and complicated regulatory obligations. With the increase of workforce, technologies and customers, there is an increase of data as well.

This whitepaper will give insights into the issues encountered by the healthcare business, as well as solutions to those problems and how to put them into action.

The Challenges:

• Increasing Healthcare Cost

Healthcare prices have been growing faster than inflation in several countries, including the United States, Canada, and Europe. The causes behind growing healthcare expenses are complicated and multifaceted. The growing cost of medical treatment is one of the most significant concerns confronting the healthcare sector. Healthcare expenses are being driven by a variety of causes, including growing medication and medical device prices, an ageing population with complicated healthcare demands, and an increase in chronic illnesses such as diabetes and heart disease.

Also, healthcare industry is heavily regulated with various laws, rules and policies covering everything from patient privacy to medication research and clearance. Compliance with these standards may be costly and time-consuming for healthcare organizations.

• Lack of Patient Engagement

Patient participation is crucial to the efficacy of healthcare interventions, yet it remains a substantial barrier in the healthcare business. One of the most prevalent explanations is a lack of comprehension of their medical condition and treatment strategy. Patients are not able to grasp the medical jargon used by healthcare practitioners, making it difficult for them to understand their diagnosis and treatment alternatives.

In certain circumstances, technology has also aided in the absence of patient participation. While technology has the potential to promote patient participation, it may also be a barrier if patients are not comfortable utilizing it.

But at the same time, patients now seek more personalized and cost-effective healthcare services, just as they do in other businesses. They want everything at the touch of their fingertips, whether it's downloading their immunization record, scheduling an appointment, paying their bills, or checking their account/insurance status.

• Healthcare Regulatory Changes

Government agencies, professional groups, and certification organisations are all potential sources of regulatory changes. New regulations, policies, and procedures that influence every part of the healthcare sector, from patient care to billing and reimbursement, are examples of these developments. The healthcare business operates in a complicated regulatory framework, which can provide hurdles to providers and hamper innovation. One of the difficulties with regulation changes is that they might be challenging to keep up with. Regulatory problems influence healthcare organisations by raising the cost of healthcare services.

• Implementing Advanced Health Technology

Although advanced health technology has the potential to transform the healthcare industry, putting it into practise can be challenging. One of the most challenging components of integrating new health technology is ensuring that it integrates seamlessly with existing healthcare systems and operations. Resistance to change is another barrier to implementing current health technology. Healthcare providers and workers may be cautious to adopt new technology, especially if it is foreign to them or disrupts their workflow. This might lead to a lack of adoption and use of the technology. So, when incorporating modern health technology, one must ensure that it is simple to use and that healthcare practitioners and personnel are properly trained and supported to use it; otherwise, the organisation may incur significant losses.

Privacy and security are also crucial factors when deploying modern health technologies. Healthcare organisations must guarantee that technology fulfils privacy and security requirements and that patient data is secure at all times.

• Insurance and Payment Systems

Patients, healthcare professionals, and organizations may be confused and apprehensive as a result of the complicated and ever-changing system. The lack of transparency is one of the key difficulties of the insurance and payment systems. Patients frequently have questions about their insurance coverage and the expenses of their care. Healthcare practitioners may often struggle to grasp multiple insurance companies' payment rates and standards. This lack of openness might result in dissatisfaction and care delays. High deductibles, co-payments, and out-of-pocket expenditures can make healthcare expensive for many individuals. Over 70% of patients get baffled by both the insurance explanation of benefits and their part of the expenses. Healthcare organizations also struggle to get compensated for their services, especially when they collaborate with different insurance companies.

Another issue that the insurance and payment systems present is the administrative load they impose on healthcare organisations. The method necessitates extensive paperwork and documentation, which may be both time-consuming and costly.

• Health Information Overload

Overload of health information is a big concern for the healthcare business. Patients and healthcare practitioners are flooded with information due to the explosion of health information available online, which may be overwhelming and confusing. The difficulty in recognizing trustworthy sources of information is one of the key issues of health information overload. Patients and healthcare practitioners may be confused about whether sources of information are reliable and accurate, resulting in confusion and even detrimental health decisions. This material contains medical problems, treatment choices, and health insurance coverage. Healthcare practitioners also struggle to stay up with the most recent research and recommendations, resulting in subpar treatment for their patients. Patients also struggle to find appropriate information for their unique health issues, leading to anxiety and stress.

Individuals that have restricted access to health information or who lack health literacy are unable to make informed decisions about their wellness due to health information overload.

• Healthcare Workforce Shortages

Healthcare manpower shortages are a serious concern for the healthcare business. A scarcity of healthcare personnel can result in restricted access to treatment, longer wait times, and lower quality of care. One of the key causes of healthcare personnel shortages is an ageing population. As the population ages, there is a greater need for healthcare services but a limited number of healthcare employees. Furthermore, an increasing number of healthcare workers are approaching retirement age, exacerbating the shortage. Healthcare personnel shortages provide additional issues for healthcare organisations. Shortages of healthcare personnel result in burnout and high turnover rates, which may be costly for healthcare organisations. Furthermore, healthcare organisations struggle to recruit and retain skilled healthcare workers, particularly in rural or underserved areas.

Healthcare worker shortages cause health inequities, particularly in disadvantaged or rural locations. Patients in these places have difficulty accessing healthcare services due to a shortage of accessible healthcare personnel.

• Chronic Disease Management

The treatment of chronic diseases is a big issue for the healthcare industry. Diabetes, heart disease, and cancer are among the main causes of mortality and disability globally. Chronic illness management can be complicated, requiring constant assistance and supervision from healthcare specialists.

One of the most difficult aspects of chronic illness treatment is providing patients with continual support and care. Chronic illness patients may require many appointments with healthcare experts, regular monitoring, and continuous education and support. This can be difficult for healthcare practitioners who may only have a limited amount of time and resources to deliver this level of care.

Chronic illness management can be difficult for healthcare practitioners as well. Chronic illness management necessitates a multidisciplinary strategy including a wide range of healthcare practitioners, including primary care physicians, specialists, and nurses. Coordination of treatment across multiple providers can be difficult, especially in locations where healthcare personnel are in limited supply.

• Aging Infrastructure

The bulk of healthcare organizations, particularly in developing countries, have outdated infrastructure that is incapable of addressing today's healthcare demands. This includes outdated medical equipment, inadequate patient care facilities, and a lack of consistent power and water supply. Older institutions may not be constructed to handle new medical equipment, or they may not have enough room to offer care. This can make working conditions difficult for healthcare staff, affecting job satisfaction and retention.

The high expense of maintenance and repair is one of the fundamental issues of aging infrastructure. Continuous maintenance and improvements are required to guarantee that healthcare facilities operate safely and effectively. As infrastructure ages, the cost of maintenance and repair rises, putting a strain on healthcare organizations' budgets.

The influence of aging infrastructure on patient treatment is another issue. Inefficiencies and delays in care can be caused by outdated infrastructure and equipment, which can have an influence on patient outcomes.

- ## Information and Integrated Health Services

The utilisation of medical devices and AI-integrated software applications may offer healthcare organisations with vast amounts of data that may be analysed to produce insights. However, most healthcare providers, lack modern architecture and data management systems for managing data from many sources. Information and integrated health services are crucial components of the healthcare sector, but they may also be difficult to implement. The expanding volume of health information, as well as the requirement to integrate it across diverse healthcare providers and systems, can provide issues for healthcare organizations. The interoperability of health information systems is one of the key issues of information and integrated health care.

Another problem of information and integrated health care is health information security and privacy. As more health information is digitized and shared across systems, the potential of data breaches and cyber assaults grows. To secure patient health information and comply with data privacy requirements, healthcare organizations must deploy stringent security measures.

Solution:

The best approach to all of the aforementioned issues is to integrate data into EHRs (Electronic Health Records) leveraging the FHIR data standard.

Integrating data from several sources into an EHR utilizing the FHIR data architecture is a powerful tool that gives healthcare practitioners with a comprehensive picture of a patient's medical history, present difficulties, and ongoing treatment plan. It enables clinicians to access and review a wide range of patient data, including test results, vital signs, prescriptions, allergies, and more.

FHIR is a versatile and extensible platform for healthcare data sharing that is meant to be readily linked with other healthcare technology. This makes it a perfect choice for EHR systems, as it enables for easy connection with other healthcare systems such as medical imaging systems, laboratory information systems, and others. Using FHIR, various EHR systems can communicate with one another and exchange patient data in real time. This is especially important when a patient visits various healthcare providers who may use different EHR systems.

FHIR and electronic health record (EHR) systems can collaborate to improve medical service delivery and patient satisfaction by enhancing interoperability, boosting patient involvement, providing more informed choices, and increasing efficiency.
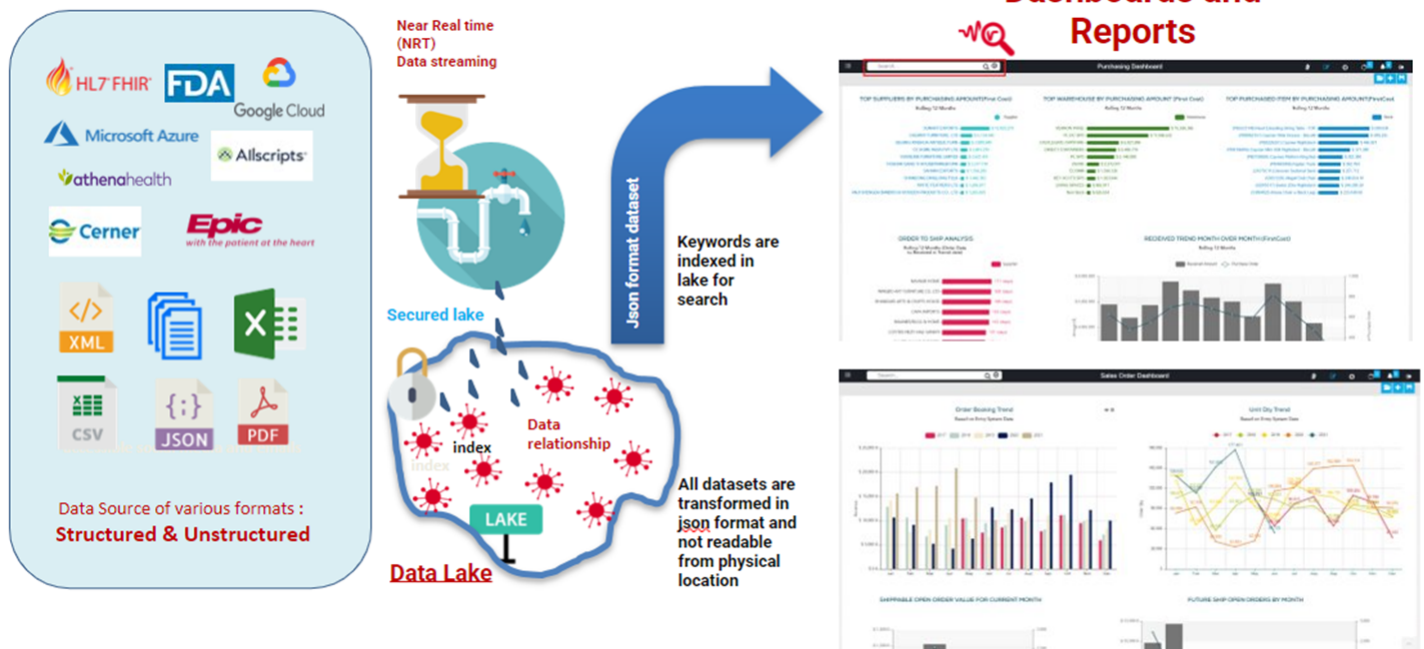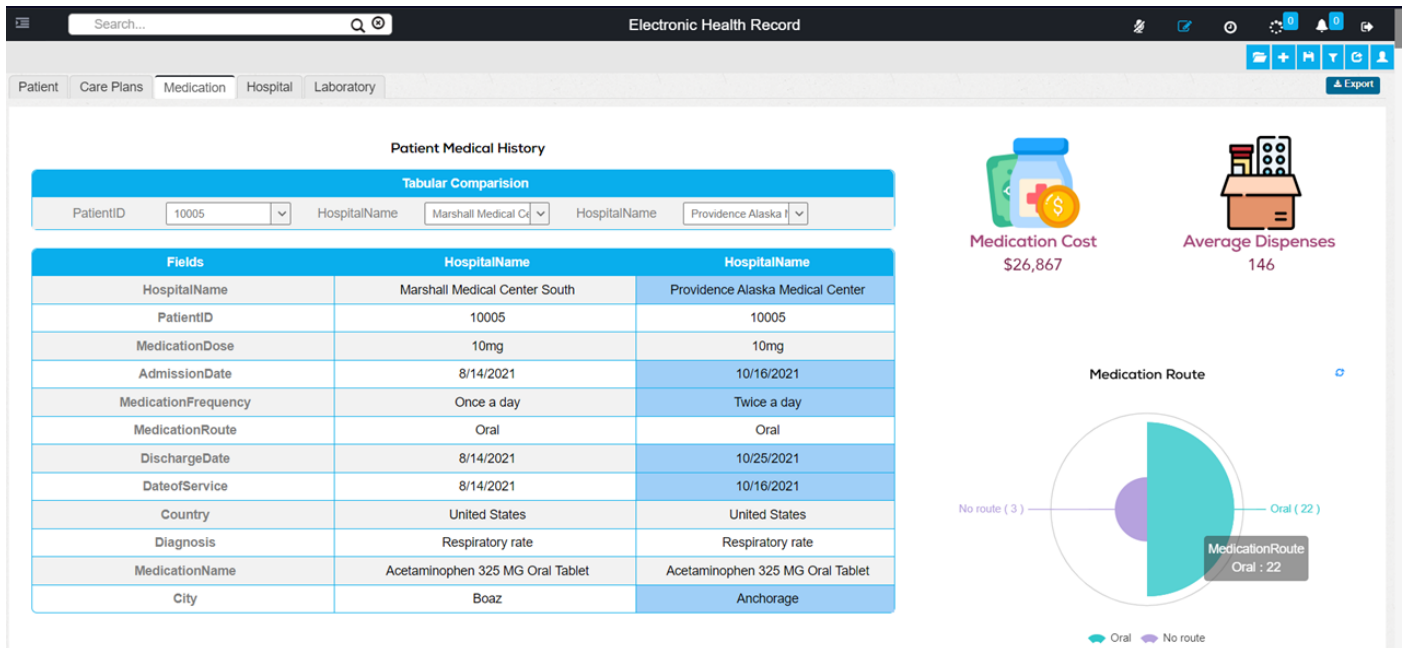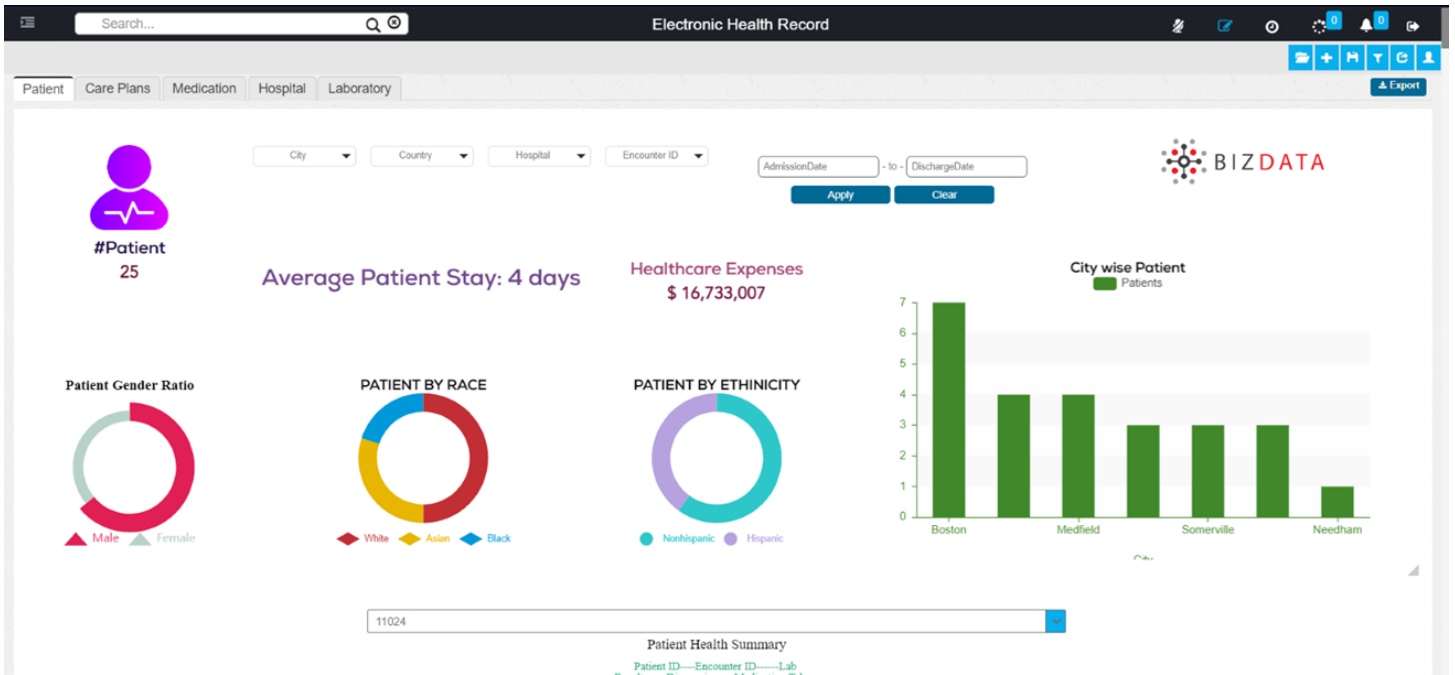
How Bizdata can help?

With eZintegrations:

- Get APIs enabled from various EHR systems to connect with one another via an array of standardized FHIR protocols.
- Ability to connect multiple data sources with different data formats.
- Get real time data.
- Ensure data privacy by encrypting data.
- Get consistent, complete and up-to-date data.

With Bizintel360:

- Get interactive dashboard, intended to be extremely configurable with various modules and widgets that may be added or discarded based on the needs of the provider.
- Get improved diagnosis, more effective therapy, and improved patient outcomes.
- Offers healthcare practitioners with valuable data analytics and reporting abilities.
- Can delve into individual data points to obtain more detailed information.

Electronic Health Record

Patient | Care Plans | Medication | Hospital | Laboratory

City | Country | Hospital | Encounter ID | AdmissionDate - to - DischargeDate

Apply | Clear

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#Patient
25

Average Patient Stay: 4 days

Healthcare Expenses
$ 16,733,007

City wise Patient
Patients

Patient Gender Ratio
Male | Female

PATIENT BY RACE
White | Asian | Black

PATIENT BY ETHINICITY
Nonhispanic | Hispanic

11024

Patient Health Summary
Patient ID-----Encounter ID------Lab

Electronic Health Record

Patient | Care Plans | Medication | Hospital | Laboratory

Patient Medical History

Tabular Comparision

PatientID | 10005 | HospitalName | Marshall Medical Ce | HospitalName | Providence Alaska N

Fields	HospitalName	HospitalName
HospitalName	Marshall Medical Center South	Providence Alaska Medical Center
PatientID	10005	10005
MedicationDose	10mg	10mg
AdmissionDate	8/14/2021	10/16/2021
MedicationFrequency	Once a day	Twice a day
MedicationRoute	Oral	Oral
DischargeDate	8/14/2021	10/25/2021
DateofService	8/14/2021	10/16/2021
Country	United States	United States
Diagnosis	Respiratory rate	Respiratory rate
MedicationName	Acetaminophen 325 MG Oral Tablet	Acetaminophen 325 MG Oral Tablet
City	Boaz	Anchorage

Medication Cost
$26,867

Average Dispenses
146

Medication Route

No route (3) | Oral (22)

MedicationRoute
Oral : 22

Oral | No route

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